

SONY®

FLAT PANEL DISPLAY

PFM-42V1
PFM-42V1A
PFM-42V1E
PFM-42V1P

VIDEO INPUT ADAPTOR

BKM-V10

COMPONENT/RGB INPUT ADAPTOR

BKM-V11

SPEAKER SYSTEM

SS-SP20B

REMOTE COMMANDER

RM-971

SERVICE MANUAL

1st Edition (Revised 1)

⚠ 警告

このマニュアルは、サービス専用です。
お客様が、このマニュアルに記載された設置や保守、点検、修理などを行うと感電や火災、人身事故につながる可能性があります。
危険をさけるため、サービストレーニングを受けた技術者のみご使用ください。

⚠ WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠ WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegebenen Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠ AVERTISSEMENT

Ce manuel est destiné uniquement aux personnes compétentes en charge de l'entretien. Afin de réduire les risques de décharge électrique, d'incendie ou de blessure n'effectuer que les réparations indiquées dans le mode d'emploi à moins d'être qualifié pour en effectuer d'autres. Pour toute réparation faire appel à une personne compétente uniquement.

WARNING!!

AN INSULATED TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS. THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY A **⚠** MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION!!

AFIN D'ÉVITER TOUT RISQUE D'ÉLECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ÊTRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MAPQUE **⚠** SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instructions.

ADVARSEL

Lithiumbatteri - Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparatillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

VAROITUS

Paristo voi räjähtää jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

For the customers in the Netherlands
Voor de klanten in Nederland

Hoe u de batterijen moet verwijderen, leest u in de tekst van deze handleiding.

Gooi de batterij niet weg maar lever deze in als klein chemisch afval (KCA).



Für Kunden in Deutschland

Entsorgungshinweis: Bitte werfen Sie nur entladene Batterien in die Sammelboxen beim Handel oder den Kommunen. Entladen sind Batterien in der Regel dann, wenn das Gerät abschaltet und signalisiert "Batterie leer" oder nach längerer Gebrauchsdauer der Batterien "nicht mehr einwandfrei funktioniert". Um sicherzugehen, kleben Sie die Batteriepole z.B. mit einem Klebestreifen ab oder geben Sie die Batterien einzeln in einen Plastikbeutel.

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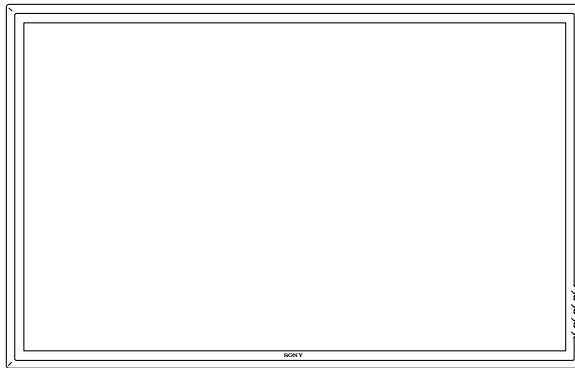
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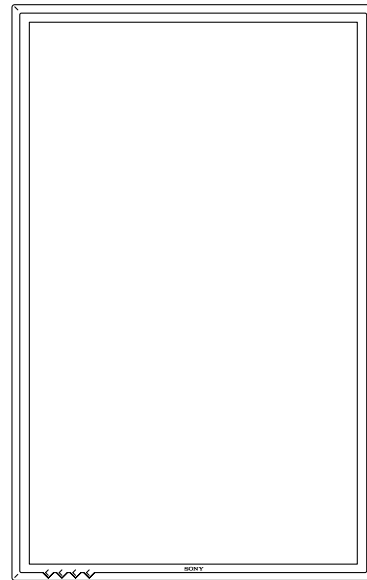
Section 1

Service Overview

1-1. Appearance Figure

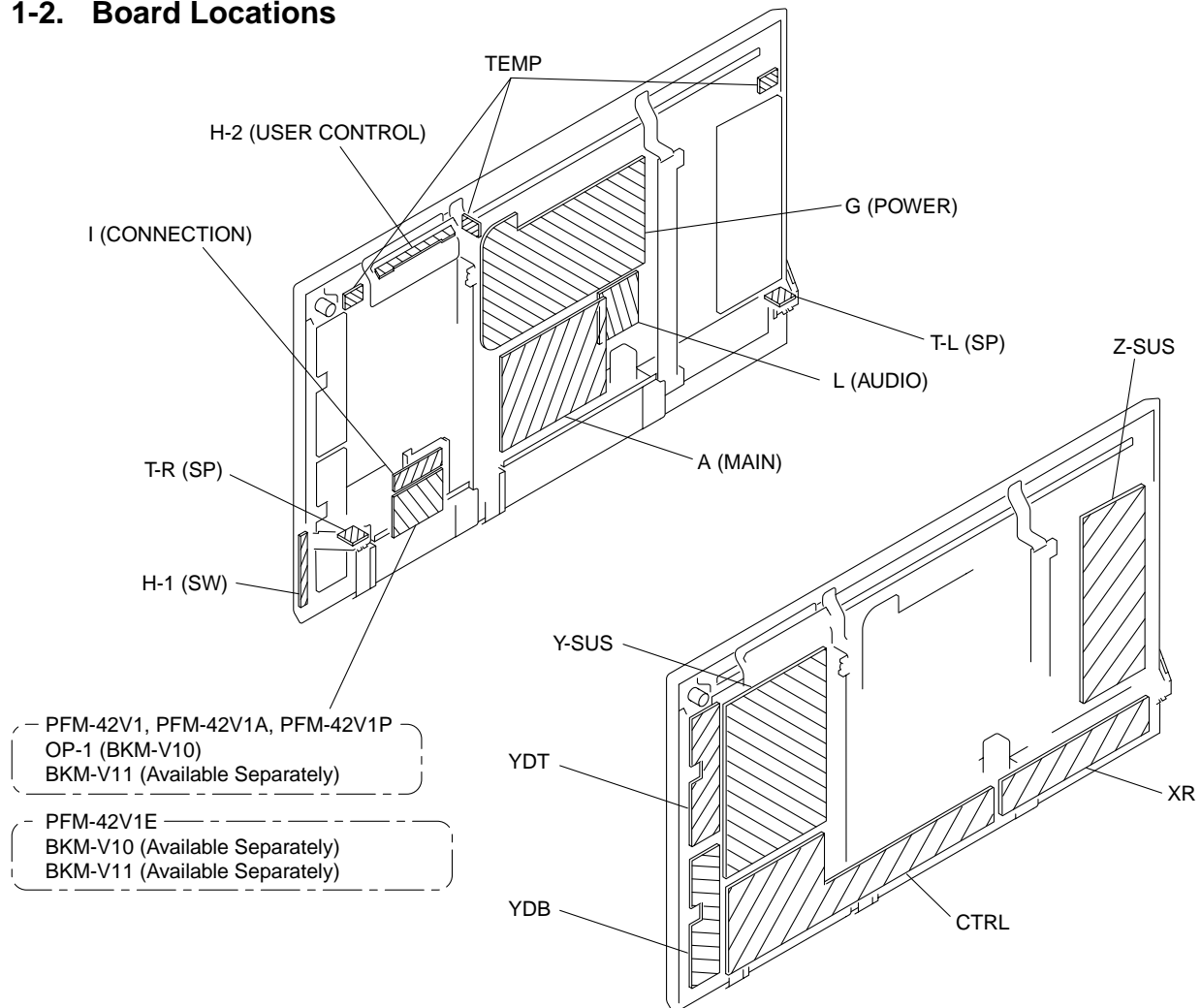


PFM-42V1
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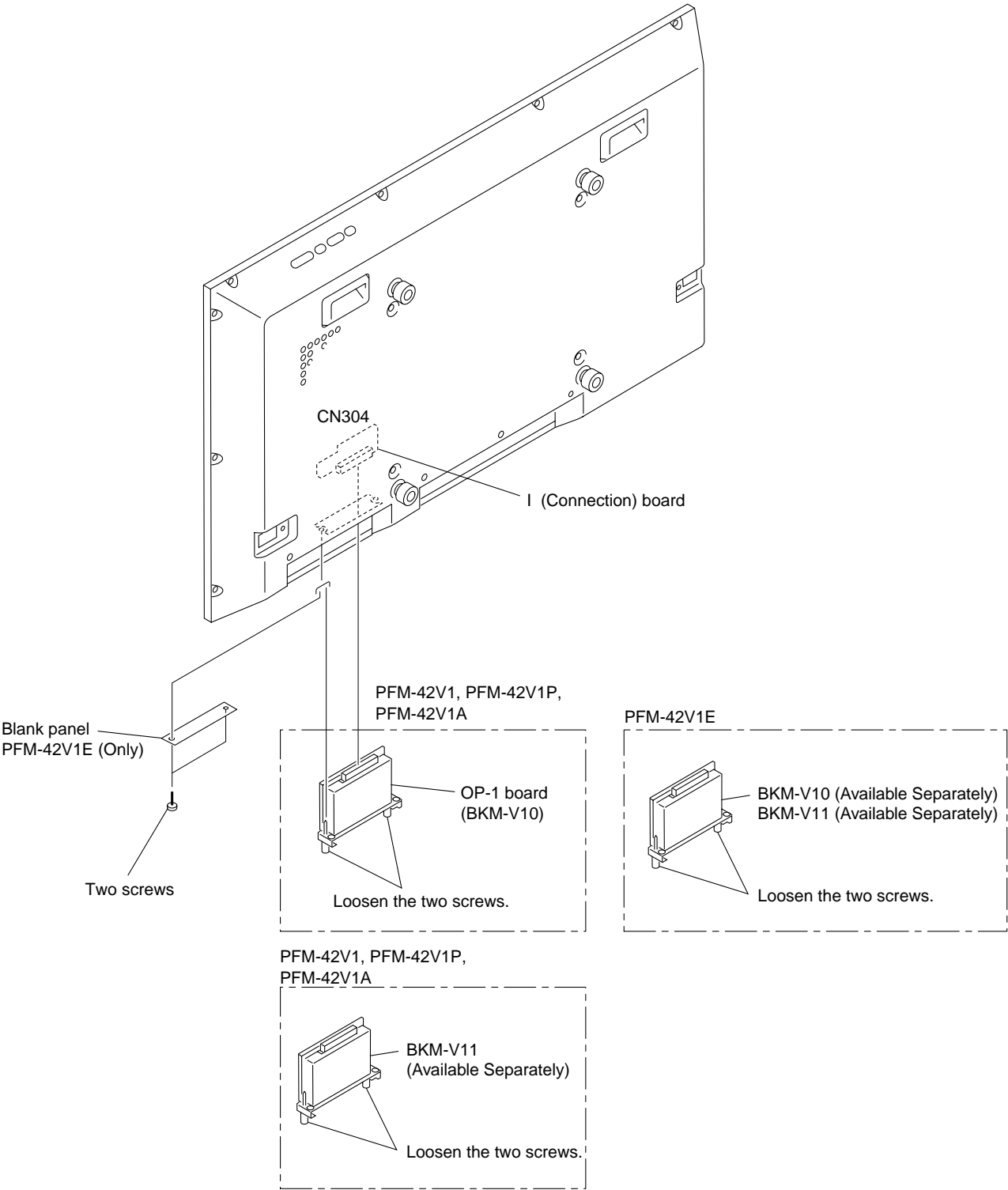
PFM-42V1P

1-2. Board Locations

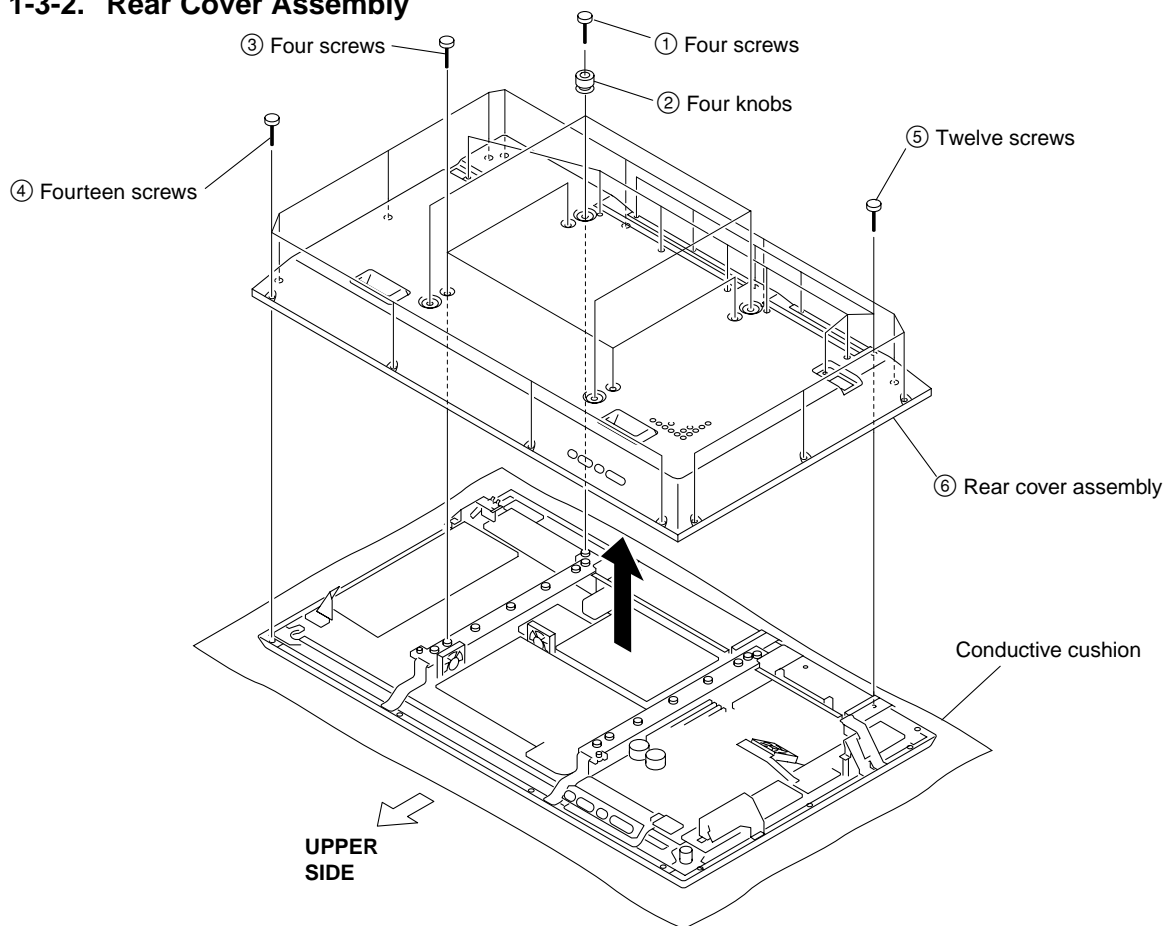


1-3. Disassembly

1-3-1. OP-1 Board and Blank Panel

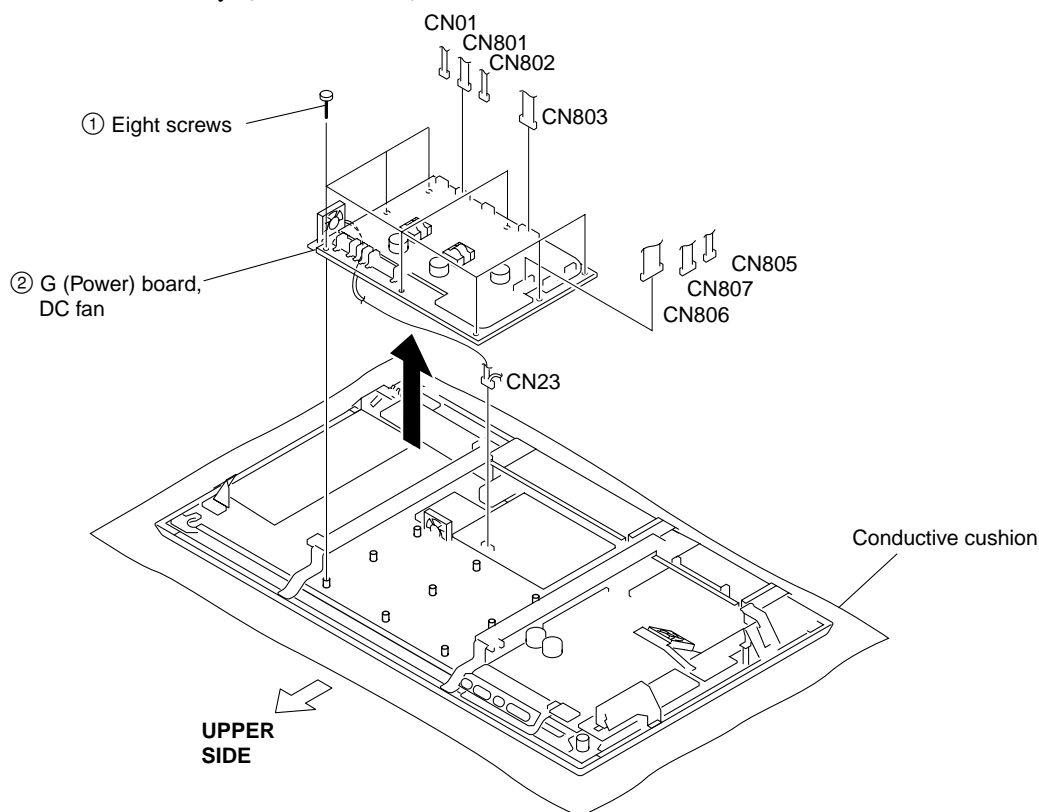


1-3-2. Rear Cover Assembly



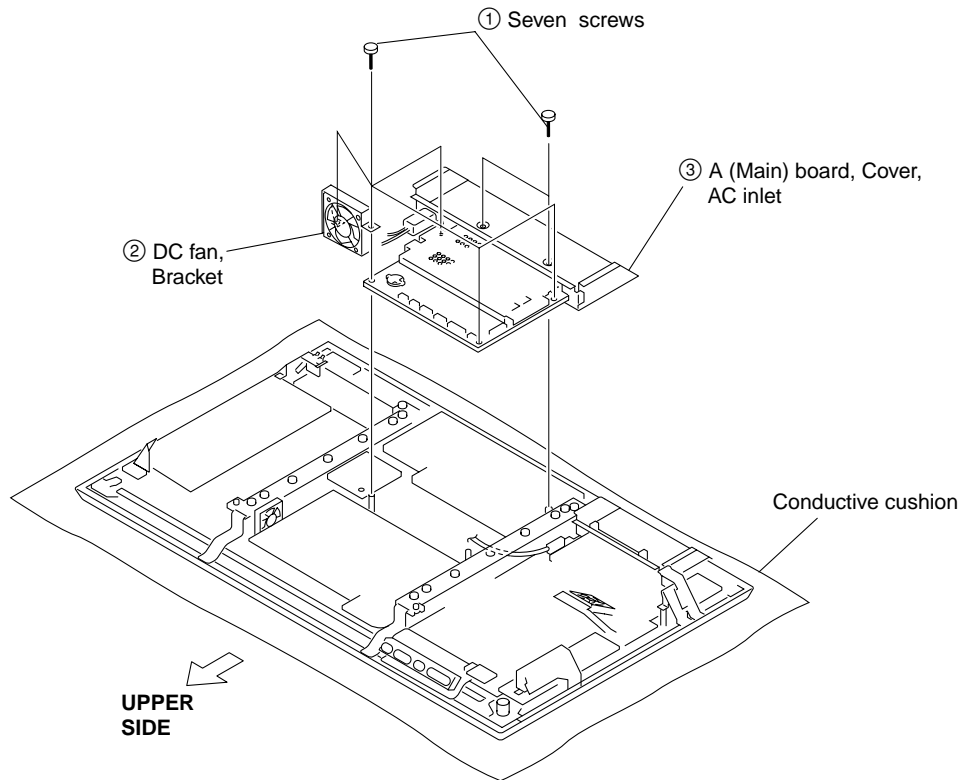
1-3-3. G (Power) Board

- Remove the rear cover assembly. (Refer to 1-3-2.)



1-3-4. A (Main) Board

- Remove the rear cover assembly. (Refer to 1-3-2.)

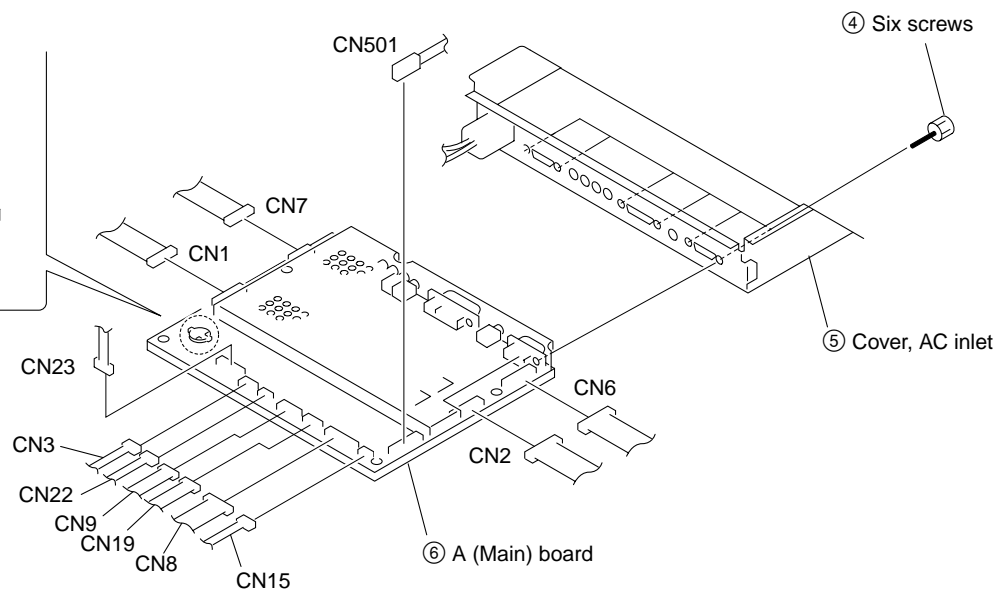


Lithium battery removal

Lithium battery (CR2032)

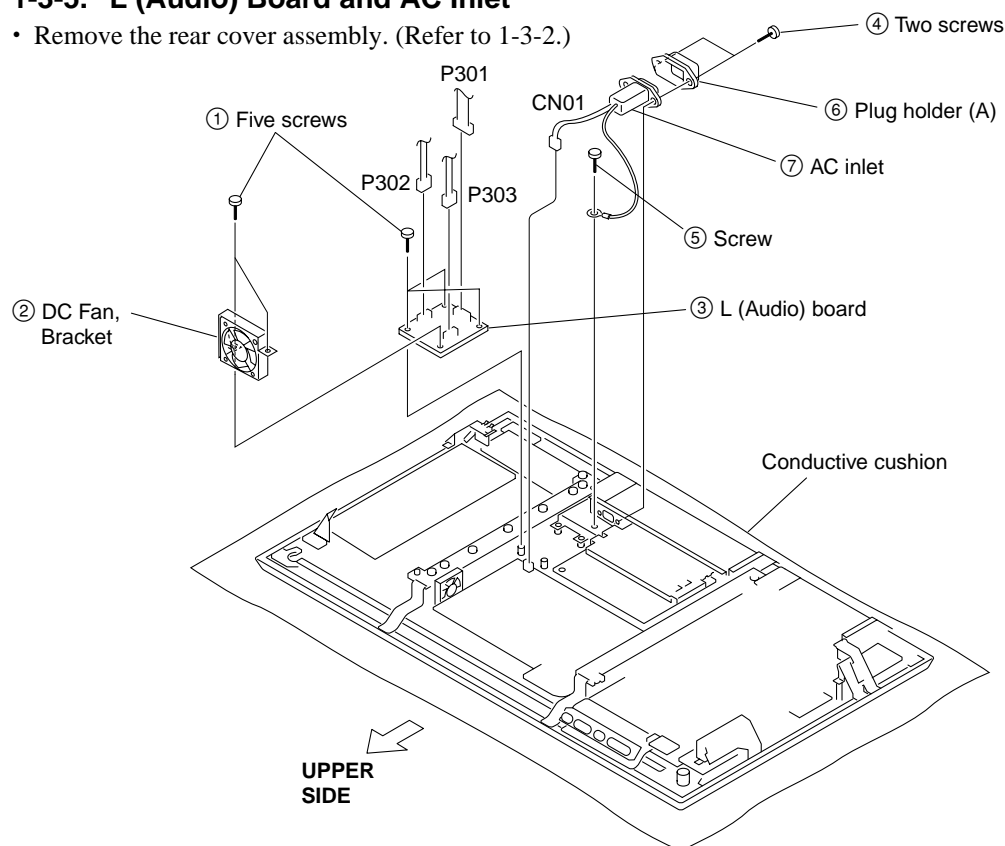
Battery holder

Remove the lithium battery in the direction of arrow.



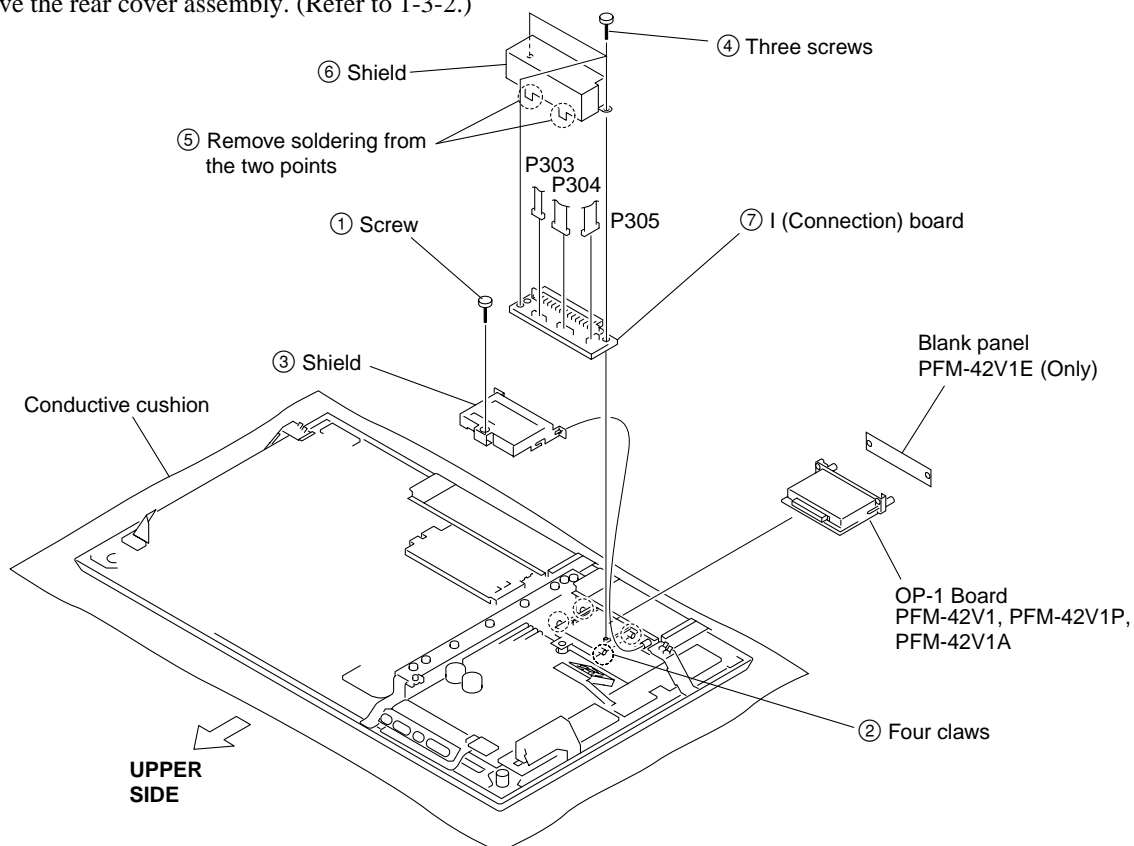
1-3-5. L (Audio) Board and AC Inlet

- Remove the rear cover assembly. (Refer to 1-3-2.)



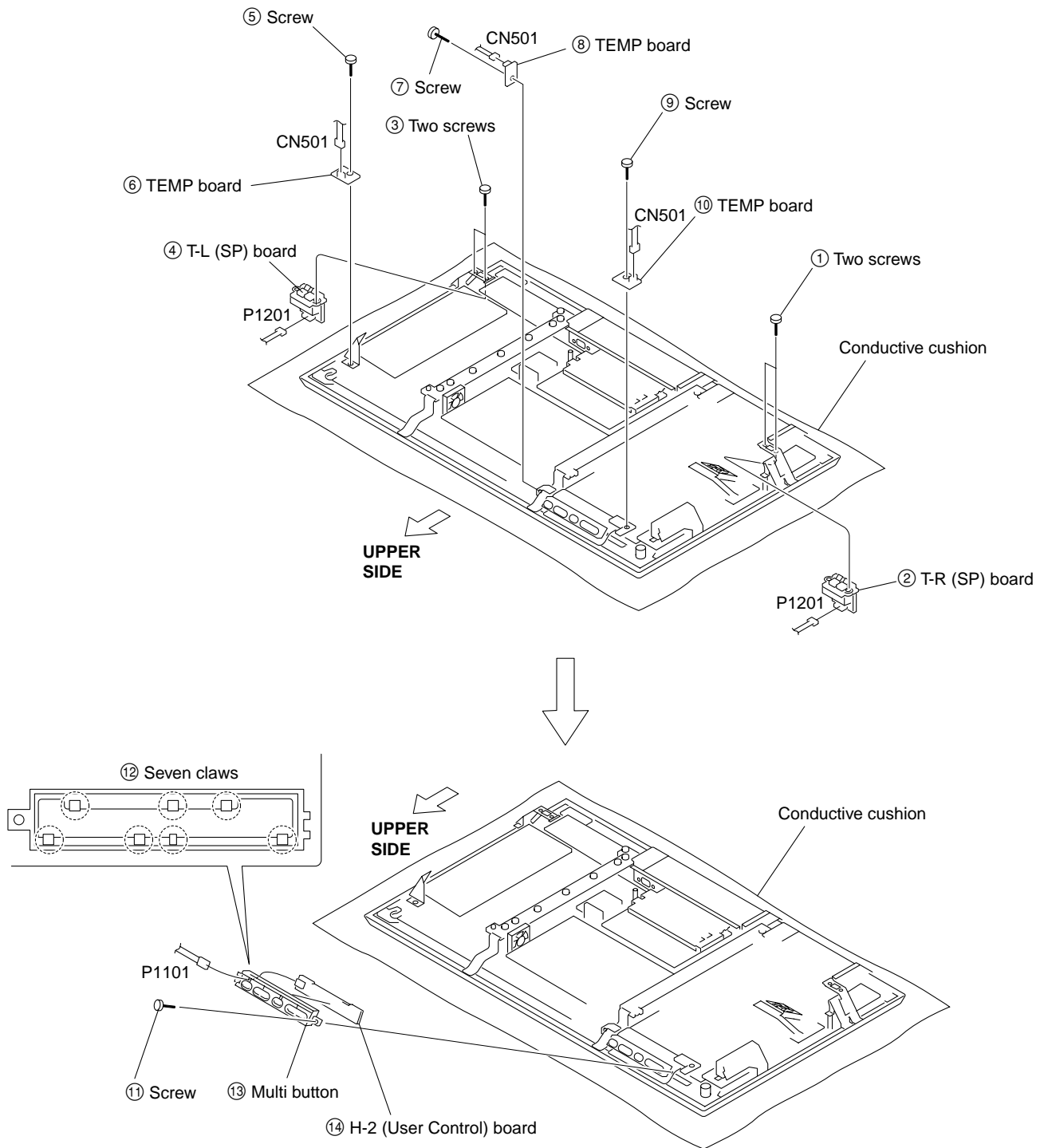
1-3-6. I (Connection) Board

- Remove the OP-1 board and blank panel. (Refer to 1-3-1.)
- Remove the rear cover assembly. (Refer to 1-3-2.)



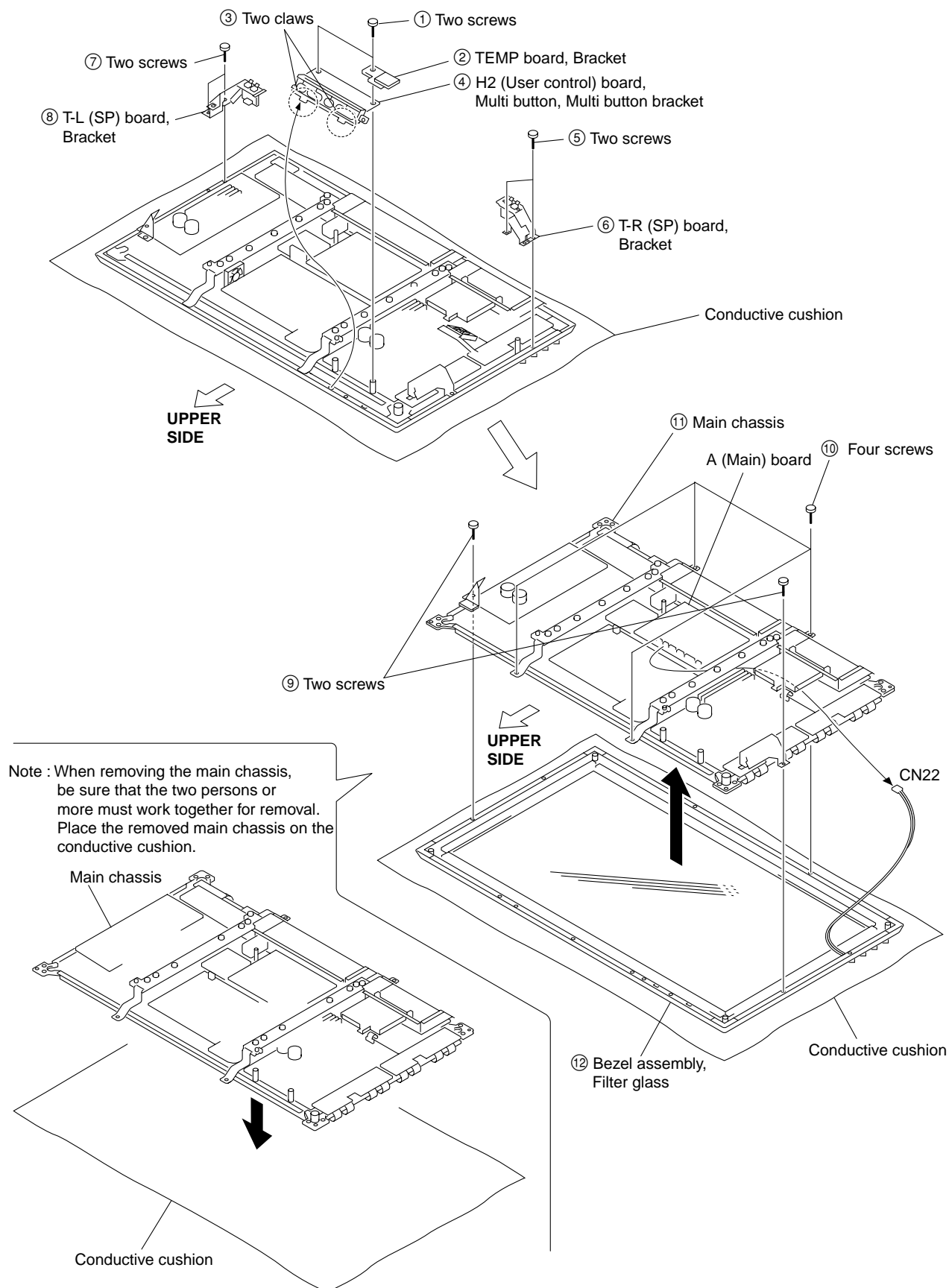
1-3-7. T-R/T-L (SP), TEMP, H2 (User Control) Boards

- Remove the rear cover assembly. (Refer to 1-3-2.)



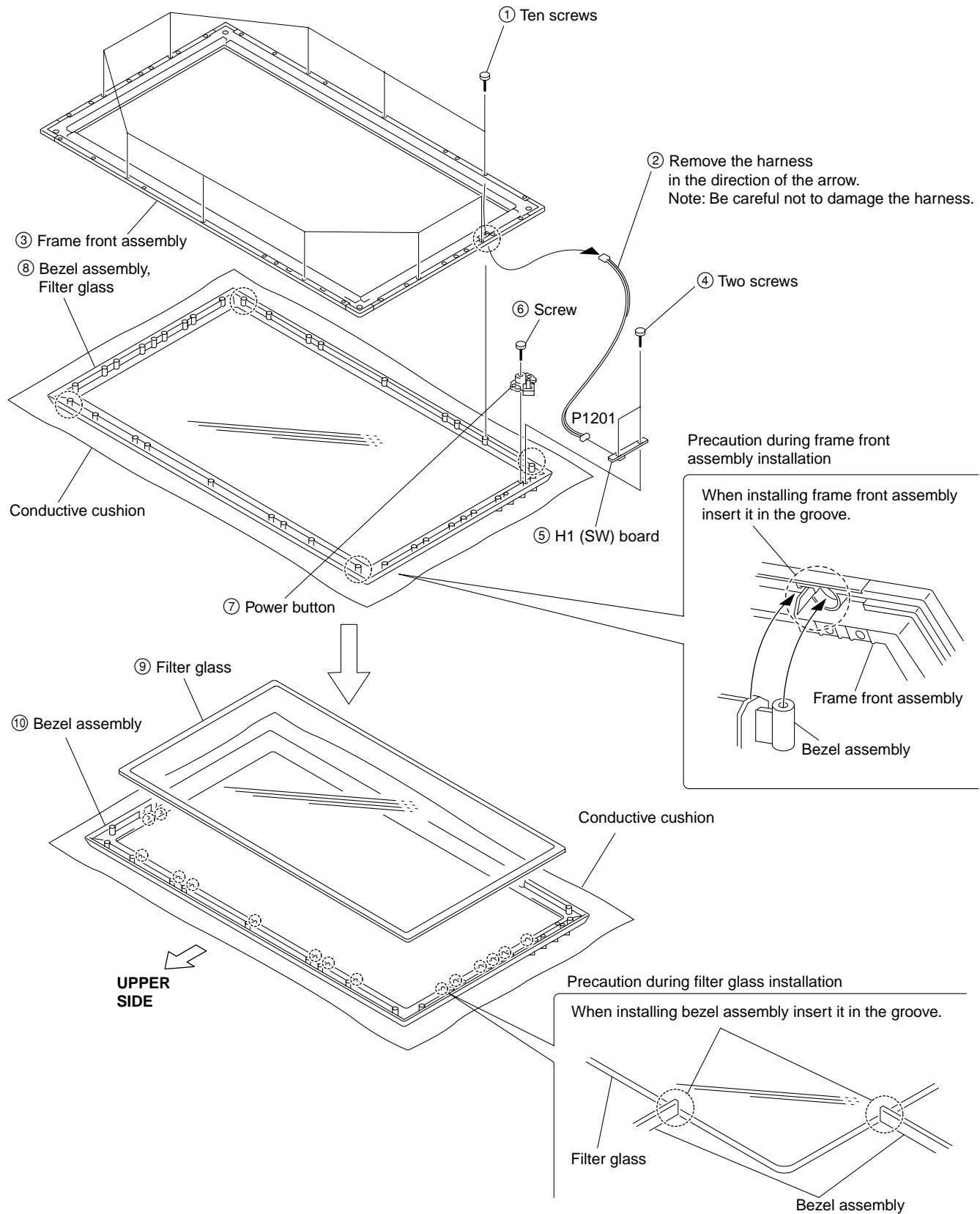
1-3-8. Bezel Assembly-1

- Remove the rear cover assembly. (Refer to 1-3-2.)



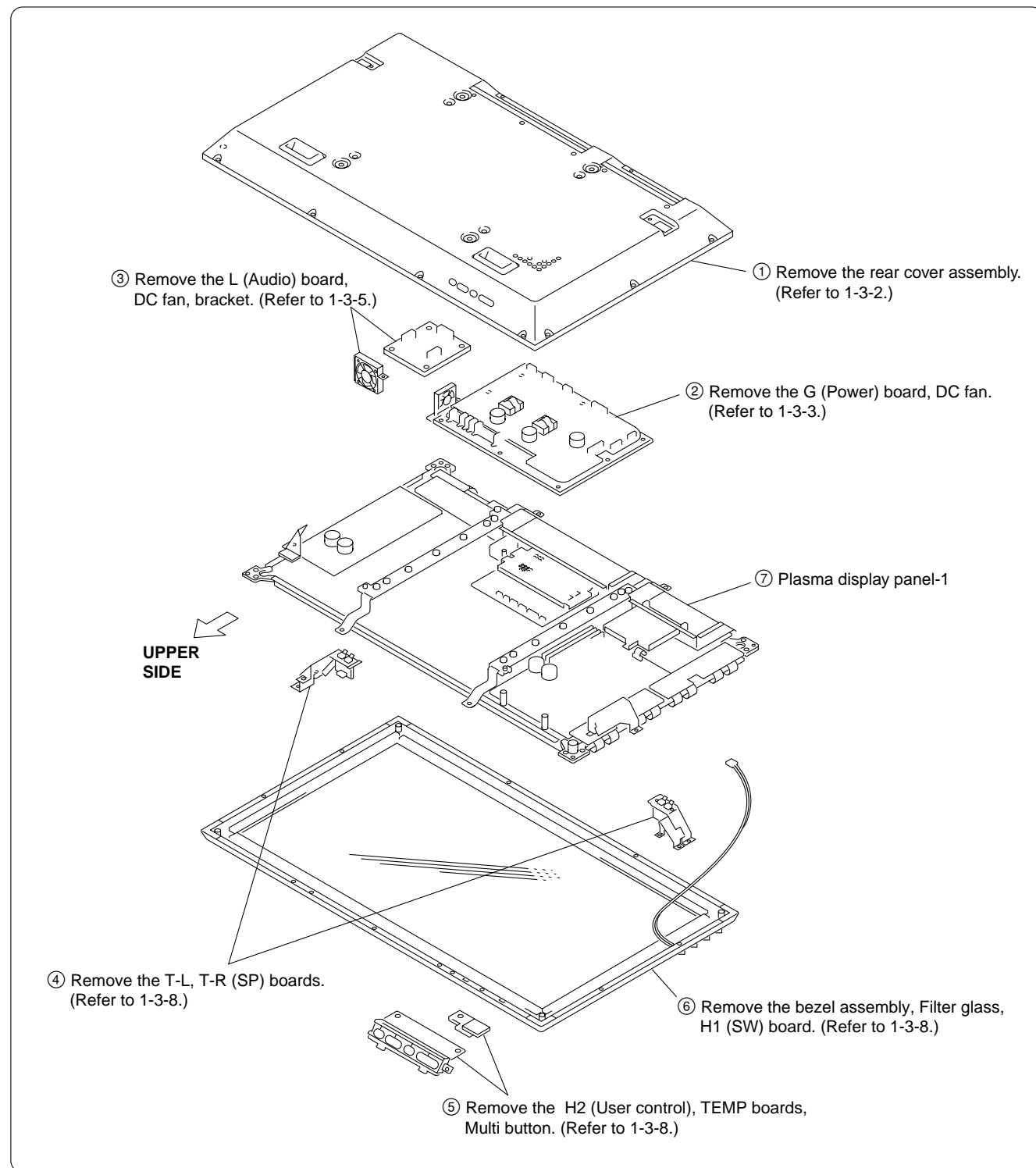
1-3-9. Bezel Assembly-2

- Remove the bezel assembly-1. (Refer to 1-3-8.)



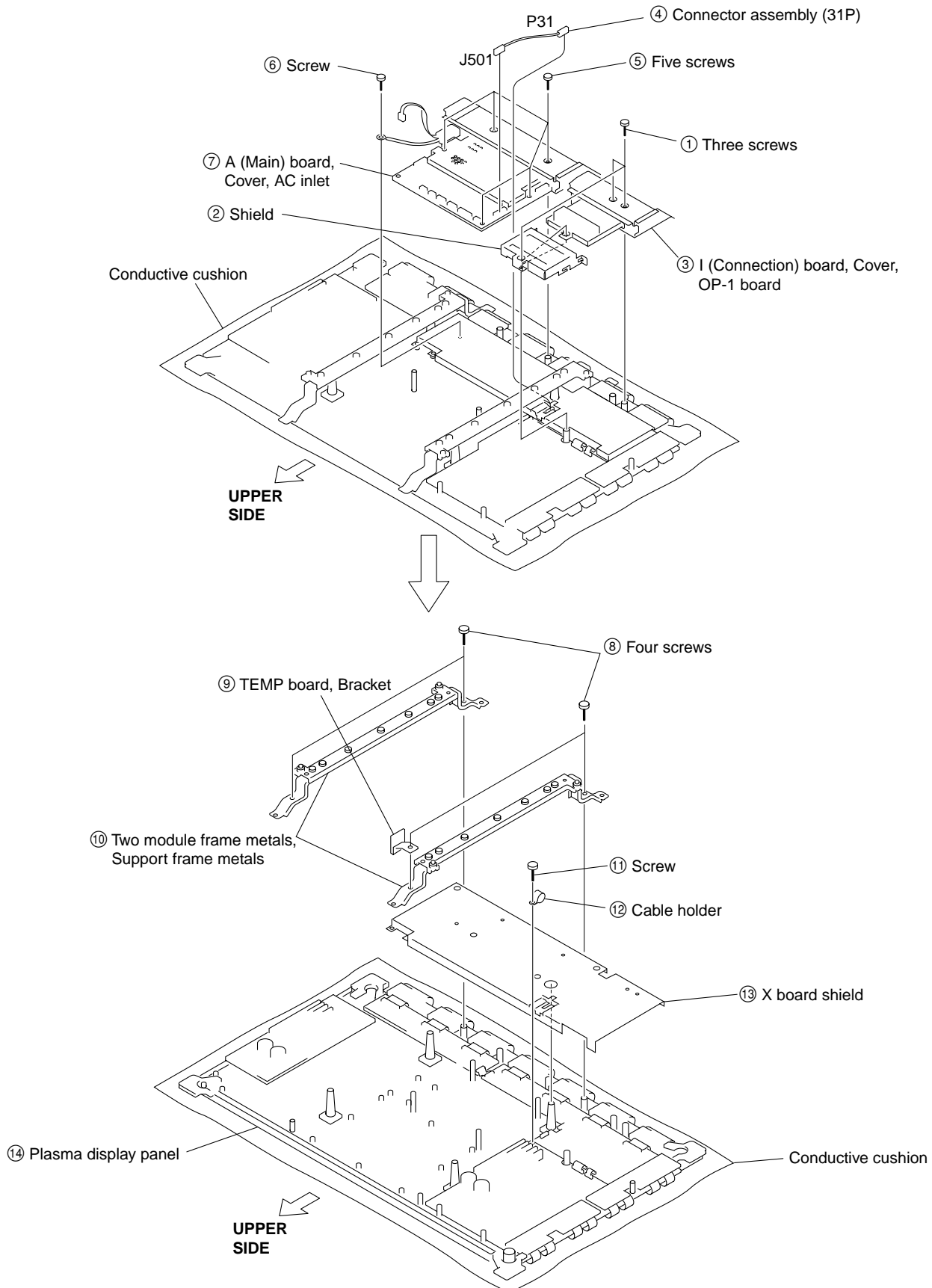
1-3-10. Plasma Display Panel-1

- To remove the plasma display panel, remove the related parts beforehand.



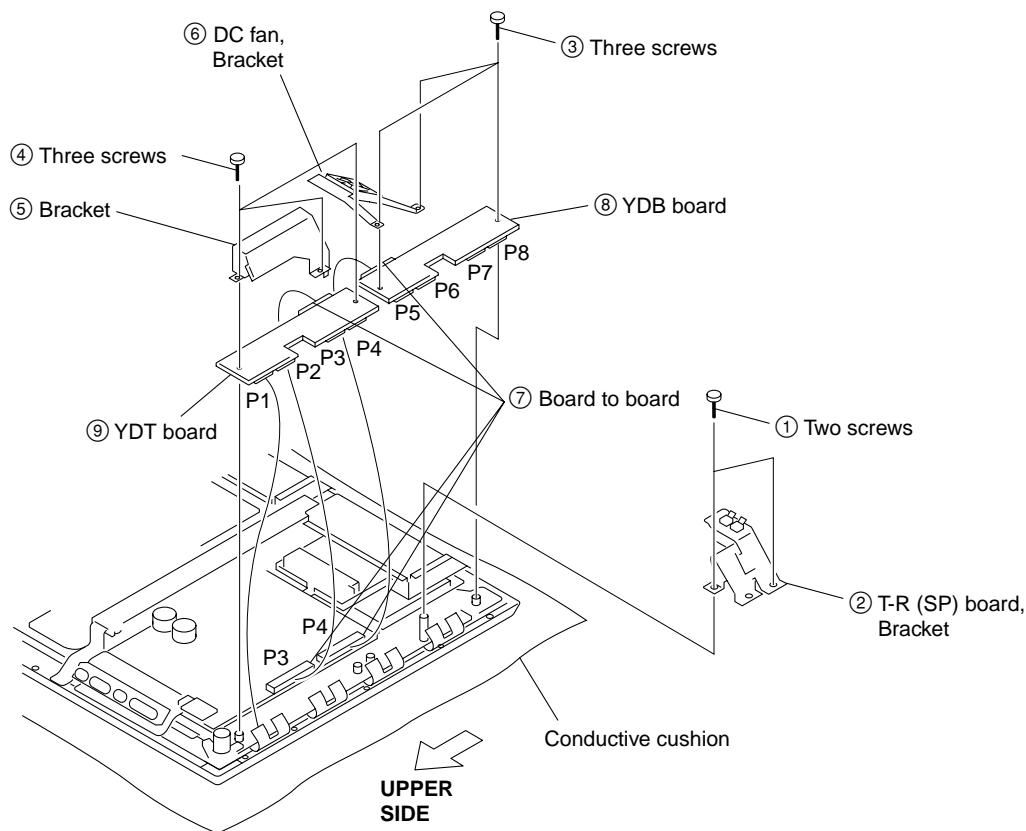
1-3-11. Plasma Display Panel-2

- Remove the plasma display panel-1. (Refer to 1-3-10.)



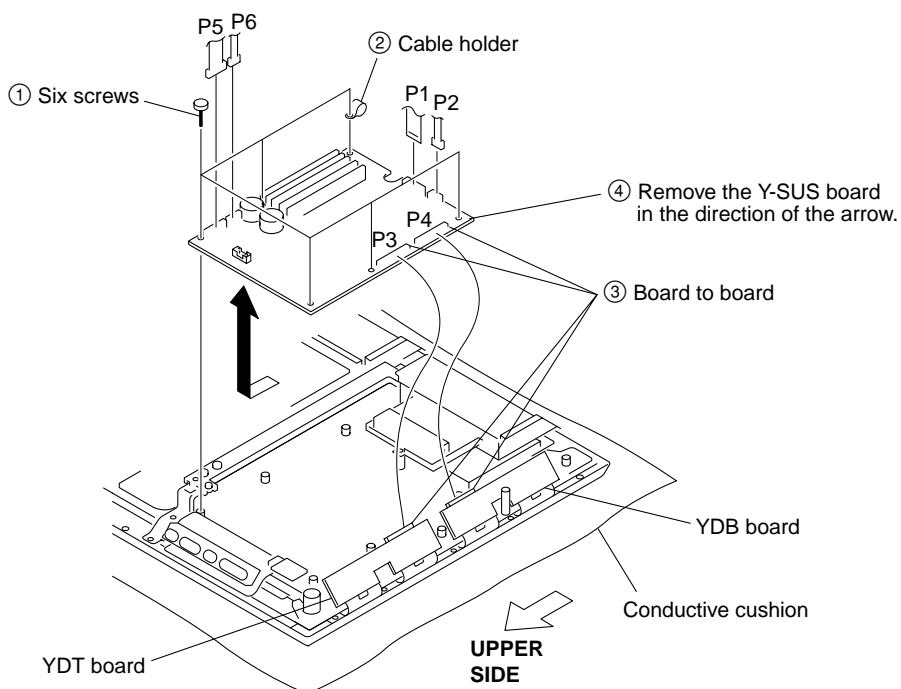
1-3-12. YDB, YDT Boards

- Remove the rear cover assembly. (Refer to 1-3-2.)



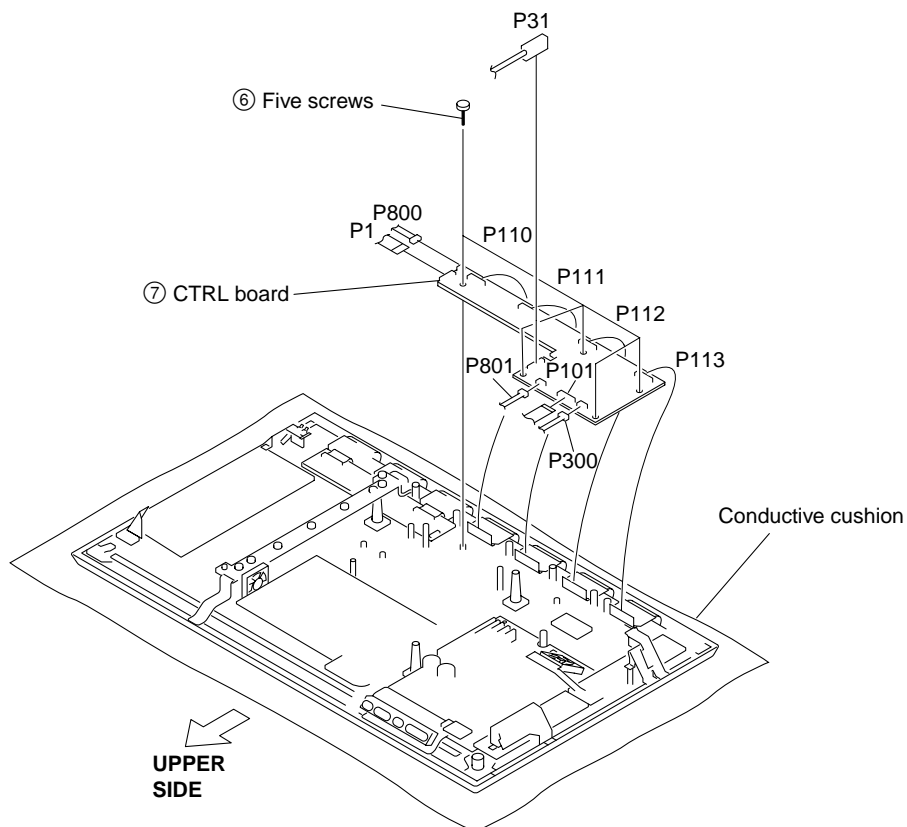
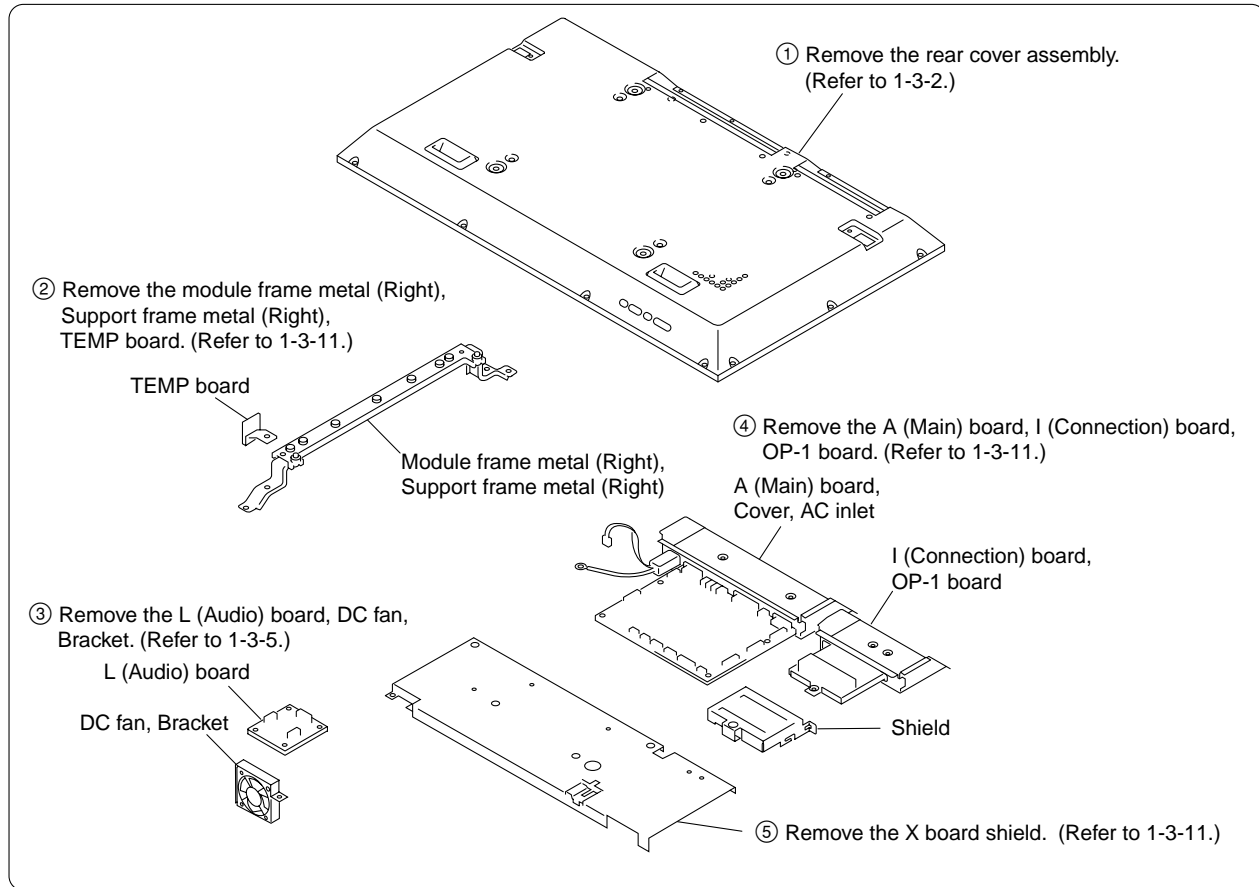
1-3-13. Y-SUS Board

- Remove the YDB, YDT boards. (Refer to 1-3-12.)



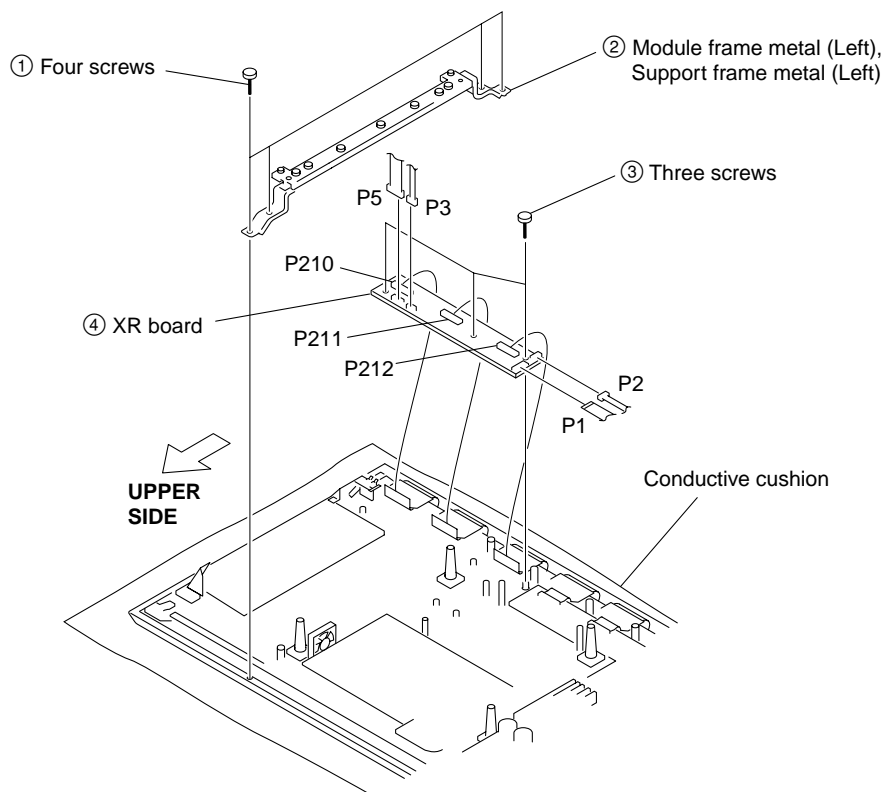
1-3-14. CTRL Board

- To remove CTRL board, remove the related parts beforehand.



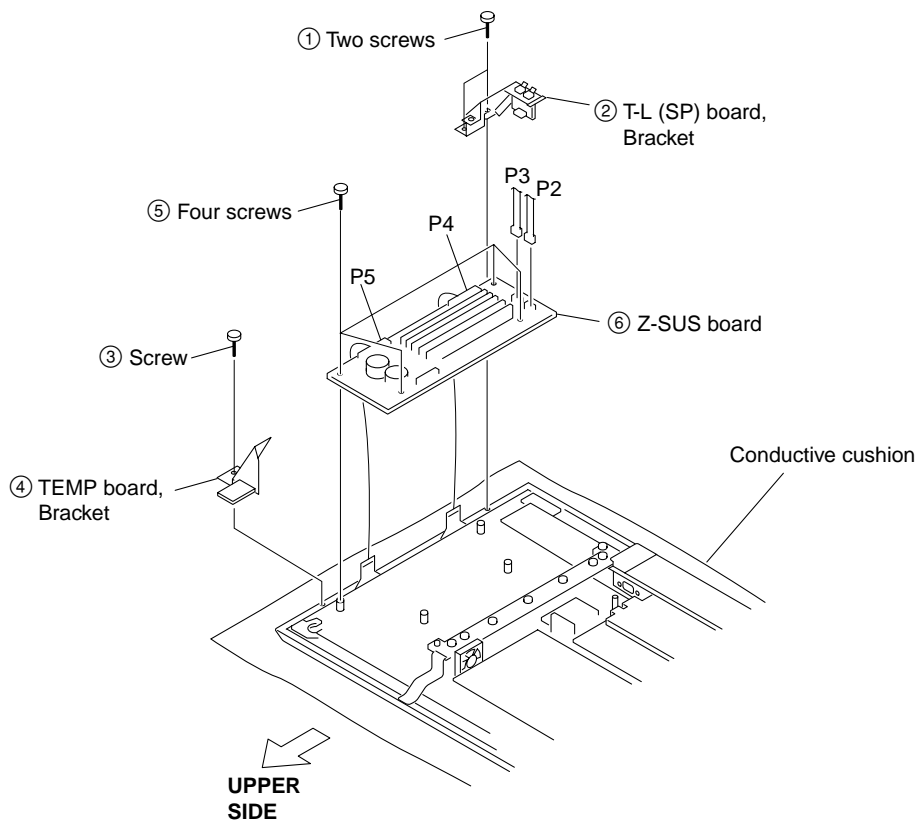
1-3-15. XR Board

- Remove the CTRL board. (Refer to 1-3-14.)



1-3-16. Z-SUS Board

- Remove the rear cover assembly. (Refer to 1-3-2.)



1-4. Warning on Power Connection

Use the proper power cord for your local power supply.

	United State, Canada	Continental Europe		United Kingdom, Ireland, Austria, New Zealand	Japan
Plug type	VM0233	COX-07	636	— ^{a)}	VM1296
Female end	VM0089	COX-02	VM0310B	VM0303B	VM1313
Cord type	SVT	H05VV-F		CEE (13) 53rd (O, C)	HVCTF
Minimum cord set rating	10A/125V	10A/250V		10A/250V	10A/125V
Safety approval	UL/CSA	VDE		VDE	DENAN-HO

a) Note : Use an appropriate rating plug which complies with local regulations.

Section 2

Electrical Adjustment

2-1. Set Up Adjustment

- Required equipment

Remote commander (RM-971)

Digital voltmeter

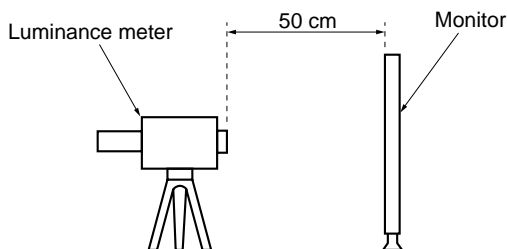
Luminance meter : Minolta LCD Color Analyzer CA-110 or equivalent

If Minolta LCD Color Analyzer CA-110 or equivalent is not available, make adjustment by comparing the LCD monitor with the reference CRT monitor that has already been calibrated correctly.

Signal generator : VG-854 or equivalent

- Preparation of luminance meter

Place the light receptor block of the luminance meter about 50 cm away from the monitor screen as shown.



1. How to enter the service mode.

1. Turn on the power.
2. Enter $\rightarrow 1 \rightarrow 8 \rightarrow 2$ of the remote controller in order and activate SERVICE MODE OSD.
3. After select INITIALIZATION menu and Execute FILL 0xFF.
(If completed, Activate ON automatically after POWER OFF.)

Note

W/B readjustment is required after the panel, board and microcomputer are replaced. However, be sure to perform aging for more than 30 minutes for RGB reset before W/B adjustment.

2. Setup

- 1) Prepare timing and pattern data for a signal generator according to the Sony timing specifications.
- 2) Connect a monitor video cable to the signal generator.
- 3) Put Color Analyzer (ex. CA-110) 50cm away from the monitor, specify it vertically in the center of the display, and adjust the focus to the optimum level using an eyepiece.
- 4) Put the monitor and Color Analyzer (ex. CA-110) in a light-shielded room.
- 5) Set up [SERVICE MODE] of the monitor.

3. Operation

Data is manually set to improve the productivity. The brightness, contrast, and backlight are set to 50, 70 and 100 respectively. After that, the default data of the color temperature to be adjusted is set.

4. Warm up time

Warm up for 30 minutes before performing any adjustment.

2-2. Adjustment for White Balance

2-2-1. AD Calibration

Execute Auto Calibration in PC (848 × 480 60 Hz), DTV 1080i and DTV 480p signal.

1. PC Signal

- 1) Activate SERVICE MODE OSD and Select AD CALIBRATION menu.
- 2) Input Full Black (No Video) Pattern.
- 3) Execute PC. CUTOFF.
- 4) Input Full White Pattern.
- 5) Execute PC.GAIN.

2. DTV (1080i/ 480p) Signal

Execute the following program sequence in order from 1080i to 480p signal.

- 1) Activate SERVICE MODE OSD and Select AD CALIBRATION menu.
- 2) Input Full Black (No Video) Pattern.
 - * If the signal is 480p, Change Color Matrix into Y/Pb/Pr from Y/Cb/Cr.
- 3) Execute DTV CUTOFF.
- 4) Input Full White Pattern.
- 5) Execute DTV GAIN.

2-2-2. White Balance Adjustment

After aging the set about 30 min, adjust Color Matrix of each color temperature 11000 K/9300 K/6500 K.

1. Preparation of Adjustment

- 1) Equipment : Signal Generator (ex: VG-828), Color Analyzer (ex: CS 1000)
- 2) Signals kinds: If want to know detail timing, refer to Sony Timing Spec.
 - PC WVGA (848 × 480 60Hz)
 - 1080I (Y/Pb/Pr)
 - 480P (Y/Pb/Pr)
 - NTSC Composite
 - PAL Composite
 - 480I (NTSC Component)
 - 575I (PAL Component)
- 3) Signal Level : 700 mVpp
- 4) Signal Pattern : Full White, 16 Gray Pattern

2. Color Matrix Adjustment

Execute the following program sequence in order PC → 1080i → 480p → 480i → 575i → NTSC Composite → PAL Composite

- 1) After input each signal, Adjust Sub Offset.
 - Input 16 Gray Pattern.
 - Activate SERVICE MODE OSD and Select WHITE BALANCE menu.
 - Change SUB-OFFSET and Adjust Brightness of 2/16 Gray Level into under 0.7 cd/m².
(SUB-OFFSET : ±10)
- 2) Input Full White Pattern.
- 3) Set up R-GAIN and R/G/B-OFFSET values of the WHITE BALANCE menu into the following TABLE value.

	PC	1080I	480P	480I	575I	NTSC	PAL
R-GAIN	32	32	34	33	33	33	35
R-OFFSET	62	68	67	65	62	65	62
G-OFFSET	62	68	67	65	62	65	62
B-OFFSET	62	68	67	65	62	65	62

(decimal)

- 4) Change G-GAIN and B-GAIN values and Adjust Color Matrix. (Refer to SONY Color Matrix Spec.)
 - 11000K : x = 276 (±15), y = 282 (±15)
 - 9300K : x = 283 (±15), y = 298 (±15)
 - 6500K : x = 313 (±15), y = 329 (±15)
- 5) Adjust each color temperature 11000 K/9300 K/6500 K. in order repeating 3) and 4) steps.

2-2-3. 11000 K Color Adjustment

- a. Select “11000 K” in “COLOR TEMP” and enter.
- b. Use a 35% (89Gray) IRE white video field in the primary mode.
- c. Adjust “SUB CONTRAST ” to secure the color temperature.
- d. Press “MENU” key to exit adjust mode.

2-2-4. 9300 K Color Adjustment

- a. Select “9300 K” in “COLOR TEMP” and enter.
- b. Repeat the adjustment procedure as steps b to d at 11000 K.

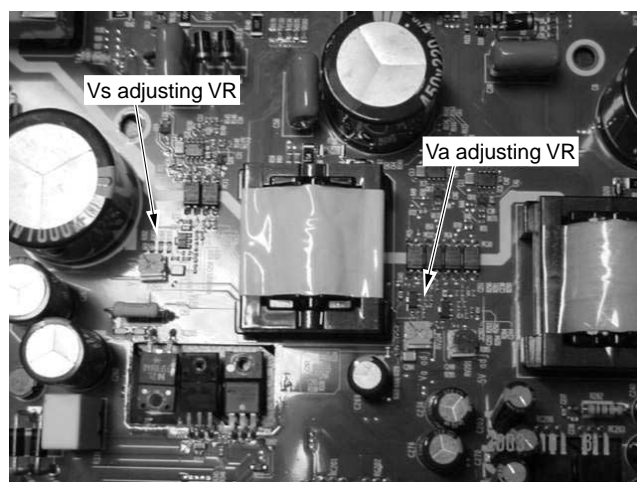
2-2-5. 6500 K Color Adjustment

- a. Select “6500 K” in “COLOR TEMP” and enter.
- b. Repeat the adjustment procedure as steps b to d at 11000 K.

2-2-6. Adjustment for the Power Board When the Panel is Replaced



The label shown in the picture above is stuck on the upper right position at the back side of the panel, on which the Va and Vs voltages for each panel are described.



The Vs and Va adjusting VRs are located at around the center part of the power board as shown in the picture. After replacing the panel, adjust each VR so that it becomes the voltage described in the above label (± 0.5 V). Voltage measurement is performed between pin 1 of CN807 and chassis GND for Vs, and between pin 6 of CN807 and pin 10 of CN806 for Va.

2-3. Adjustment for Panel

2-3-1. Application Object

This standard is applied to the PDP42V5#### PDP Module which is manufactured by the manufacturing team of PDP promotion department or elsewhere.

2-3-2. Notes

- (1) Without any special specification, the Module should be at the condition of preliminaries more than 10 minutes before adjusting.
 - Service signal : 100% Full White signal
 - Service DC voltage : Vcc : 5 V, Va : 65 V, Vs : 190 V
 - DC/DC Pack voltage : Vsetup : 220 V, Vscw : 115 V, -Ve : -35 V, -Vy : -75 V
 - Preliminaries environment : Temp ($25 \pm 5^\circ\text{C}$), Relative humidity ($65 \pm 10\%$)
- (2) Module should get the Aging for the equilibrium after finish the assembling. Aging condition is shown below.
 - Service signal : 100% Full White, Red, Green, Blue pattern signal (Service time of each pattern : within 5 minutes/cycle)
 - Service DC voltage : Match the voltage with the set up voltage in the first adjustment.
 - Aging time : More than 4 Hrs
 - Aging environment : Temp ($60 \pm 2^\circ\text{C}$), relative humidity-Less than 75%
- (3) Module adjustment should be followed by below sequence.
 - Setting up the initial voltage and adjusting the voltage wave form of Vsetup
 - Measuring the Margin of Vs voltage and deciding the voltage
 - Adjusting and checking the voltage of DC/DC pack (Vsetup, Vscw, -Ve, -Vy)
 - Adjusting the voltage wave form of Vset-down
 - Measuring the voltage margin of Vset-up and deciding the voltage
 - Adjusting the wave form of final voltageBut, these items above can be changed by the consideration of mass production.
- (4) Without any special specification, you should adjust the Module in the environment of Temp ($25 \pm 5^\circ\text{C}$) and Relative humidity ($65 \pm 10\%$)

CAUTION

If you let the still image more than 10 minutes (especially The Digital pattern or Cross Hatch Pattern which has clear gradation), after image can be presented in the black level part of screen.

2-3-3. Adjustment Items

1. Adjusting the Board Group

- (1) Adjusting the voltage wave form of Vsetup
- (2) Adjusting the voltage wave form of Vset-down
- (3) Adjusting the voltage wave form of Vramp

2. Adjustment after assembling (PDP Module adjustment)

- (1) Setting up the initial voltage and adjusting the voltage wave form of Vsetup
- (2) Measuring the voltage Margin of Vs and deciding the voltage
- (3) Adjusting and checking the voltage of DC/DC pack (Vsetup, Vscw, -Ve, -Vy)
- (4) Adjusting the voltage wave form of Vset-down
- (5) Measuring the voltage Margin of Vset-up and deciding the voltage
- (6) Adjusting the wave form of final voltage

2-3-4. Adjusting the Board Group (Applying the Tools)

1. Using Tools

- (1) Digital oscilloscope : More than 200 MHz
- (2) DVM (Digital Multimeter) : Fluke 87 or similar one
- (3) Signal generator : VG-825 or similar one
- (4) DC power supply
 - DC power supply for Vs (1) : Should be changeable more than 0-200 V/ more than 10 A
 - DC power supply for Va (1) : Should be changeable more than 0-100 V/ more than 5 A
 - DC power supply for 5 V (1) : Should be changeable more than 0-10 V/ more than 10 A
 - DC-DC Converter tool (1) : The tool which has voltage equivalent output of PDP42V5#### Module after taking the Vs, Va, 5 V voltage
 - Voltage stability of power supply : Within $\pm 1\%$ for Vs/Va, within $\pm 3\%$ for 5 V

2. Connection diagram of measuring instrument and setting up the initial voltage

- (1) Connection diagram of measuring instrument
Refer to Fig. 1.(Connection diagram of measuring instrument that adjusting the voltage wave form)
- (2) Setting up the initial voltage
Initially setting up voltage : Vcc : 5 V, Va : 65 V, Vs : 190 V
But, initially setting up voltage can be changed by the set up range according to the Module's characteristic.

3. How to Adjust

- (1) Adjusting the Voltage Wave form of Vsetup
 - Connect measuring instrument like the connection diagram Fig. 1.
 - Turn on the power of the measuring instrument like the <Caution> item Fig. 1.
 - Connect the oscilloscope probe to P4 connector (80 Pin) of Y-SUS PCB and GND.
 - Turn the VR1 of Y-SUS PCB and make the "A" wave form Fig. 2 to be $25 \pm 5 \mu\text{s}$.
- (2) Adjusting Vset-down Voltage Wave form
Turn the VR2 of Y-SUS PCB and make the "B" wave form Fig. 2 to be $190 \pm 5 \mu\text{s}$.
- (3) Adjusting Vramp Voltage Wave form
 - Connect oscilloscope Probe to the B37 (Pin) of Z board and the GND of Z board.
 - Turn the VR3 of Z board and make the "C" wave form Fig. 3 to be $15 \pm 2 \mu\text{s}$.

But, in case of not setting up the Test point, produce same output and adjust wave form connect to other pattern or parts which has no possibility of short.

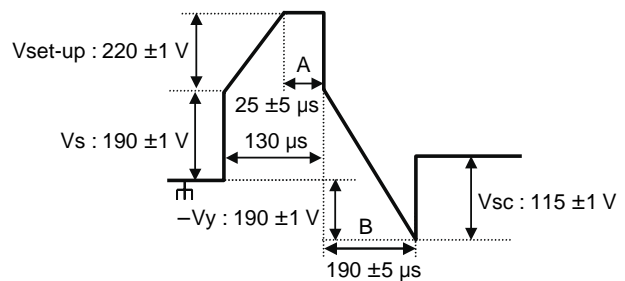


Fig. 2 Y Set-up Wave form

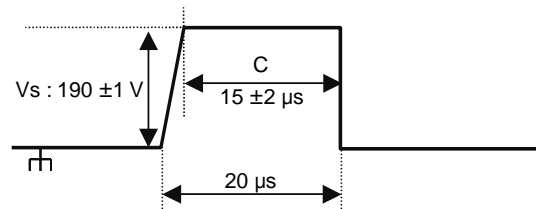


Fig. 3 Z ramp Wave form

2-3-5. Adjustment after Assembling (PDP Module Adjustment)

1. Using Tools

- (1) Digital oscilloscope : More than 200 MHz
- (2) DVM (Digital Multimeter) : Fluke 87 or similar one
- (3) Signal generator : VG-825 or similar one
- (4) DC power supply
 - DC power supply for V_s (1) : Should be changeable more than 0-200 V/ more than 10 A
 - DC power supply for V_a (1) : Should be changeable more than 0-100 V/ more than 5 A
 - DC power supply for 5 V (1) : Should be changeable more than 0-10 V/ more than 10 A
 - DC-DC Converter tool (1) : The tool which has voltage equivalent output of PDP42V5#### Module after taking the V_s , V_a , 5 V voltage
 - Voltage stability of power supply : Within $\pm 1\%$ for V_s/V_a , within $\pm 3\%$ for 5 V

2. Connection diagram of measuring instrument and setting up the initial voltage

- (1) Connection diagram of measuring instrument
Refer to figure 1. (Connection diagram of measuring instrument that adjusting the voltage wave form)
- (2) Setting up the initial voltage
Initially setting up voltage : V_{cc} : 5 V, V_a : 65 V, V_s : 190 V
But, initially setting up voltage can be changed by the set up range according to the Module's characteristic.

3. How to Adjust

- (1) Adjusting initial voltage wave form
Check the voltage wave form like the mentioned way on the item "3. How to Adjust" of Section 2-3-4 and readjust the wave form when it is wrong.
- (2) Checking the DC/DC pack voltage
 - Convert the signal of signal generator to the 100% Full White signal
 - Connect the GND terminal of DVM to the GND of Y board and set the Plus terminal to the right up leg of R9 to check the $-V_e$ voltage (-35 ± 1 V). And when there is abnormality in voltage turn the variable resistor (VR7) of DC/DC Pack ($-V_e$) on Y board to adjust.
 - Connect the GND terminal of DVM to the R60's right leg of the Y board and set the Plus terminal to the left leg of R60 to check the V_{scw} voltage (115 ± 1 V) and when there is abnormality in voltage turn the variable resistor (VR5) of DC/DC Pack (V_{scw}) on Y board to adjust.

- Connect the GND terminal of DVM to the R8's right leg of the Y board and set the Plus terminal to the left leg of R8 to check the $-V_y$ voltage (-80 ± 1 V) and when there is abnormality in voltage turn the variable resistor (VR6) of DC/DC Pack ($-V_y$) on Y board to adjust.
 - Connect the GND terminal of DVM to the R89's right leg of the Y board and set the Plus terminal to the left leg of R89 to check the V_{setup} voltage (240 ± 1 V) and when there is abnormality in voltage turn the variable resistor (VR4) of DC/DC Pack (V_{setup}) on Y board to adjust.
- (3) Measuring the V_s voltage Margin and deciding the voltage
 - Convert the signal of signal generator to the 100% Full Red signal.
 - Turn the voltage adjusting knob of V_s DC power supply to the voltage-down direction and make the cell of screen turned off.
 - Turn the voltage adjusting knob of V_s DC power supply to the voltage-up direction until the cell of screen turned on. The first voltage, which make the cell of full screen turned on, is named as V_{smin1} and record it.
 - Turn the voltage adjusting knob of V_s DC power supply to the voltage-up direction slowly until the cell of screen turned off or over electric discharge. The first voltage, which makes the cell of screen turned off or over electric discharge, is named as V_{smax1} and records it. (Only, V_s voltage variable passes over the maximum 195 V)
 - Convert the signal of signal generator to the 100% Full Green signal.
 - Repeat the adjustment (2) item and name each voltage as V_{smin2}/V_{smax2} and record them.
 - Convert the signal of signal generator to 100% Full Blue signal.
 - Repeat the adjustment (2) item and name each voltage as V_{smin3}/V_{smax3} and record them.
 - Convert the signal of signal generator to 100% Full White signal.
 - Repeat the adjustment (2) item and name each voltage as V_{smin4}/V_{smax4} and record them.
 - Convert the signal of signal generator to 100% Full Black signal.
 - Repeat the adjustment (2) item and name each voltage as V_{smin5}/V_{smax5} and record them.
 - At this time decided V_s voltage ($V_{smin1}-V_{smin5}$) adds 6 V to Max value and set up the voltage within the set-up range ($180 \text{ V} < V_s \leq 195 \text{ V}$) in consideration of other features.
 - Turn the voltage adjusting knob of V_s DC power supply make deciding the V_s voltage.
 - Adjust V_{set} down wave form using setting up V_s voltage like mentioned on the item "3. How to Adjust" of Section 2-3-4 .

- (4) Adjusting the final voltage wave form
Check the voltage wave form like the mentioned way
on the item “3. How to Adjust” of Section 2-3-4 and
readjust the wave form when it is twisted.
- (5) DC-DC Pack Voltage Set up Range
Vsetup : 210 V ~ 240 V
Vsc : 90 V ~ 120 V
-Vy : -60 V ~ -80 V
-Ve : -35 V ~ -45 V

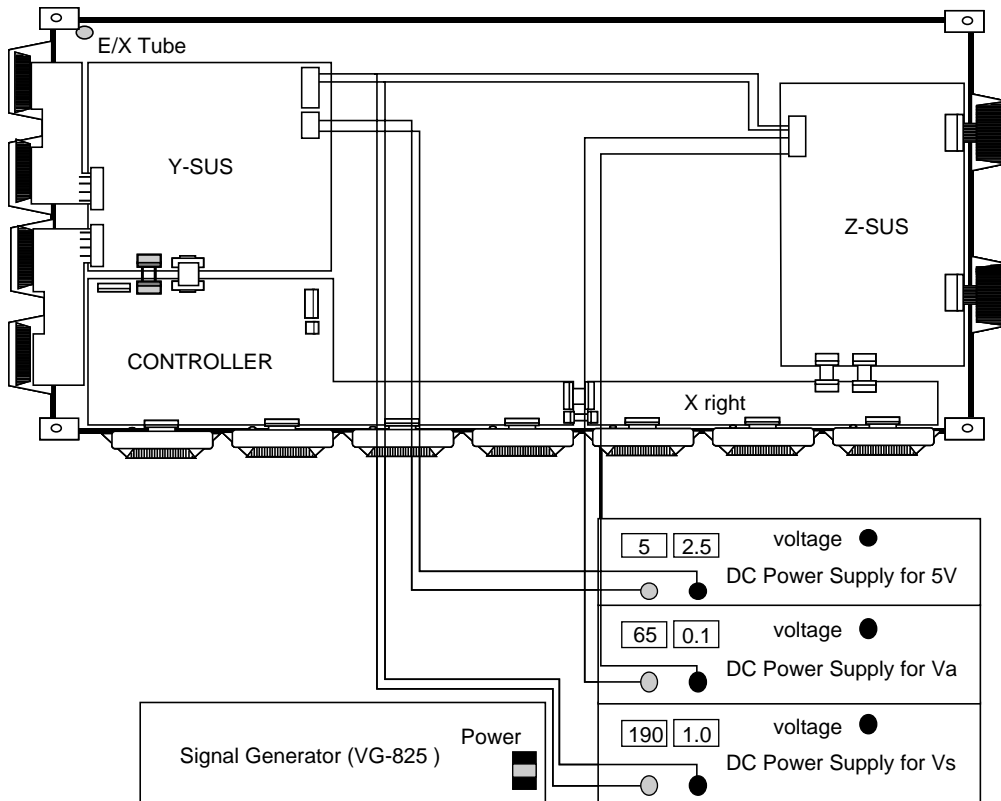


Fig. 1 Connection diagram of measuring instrument

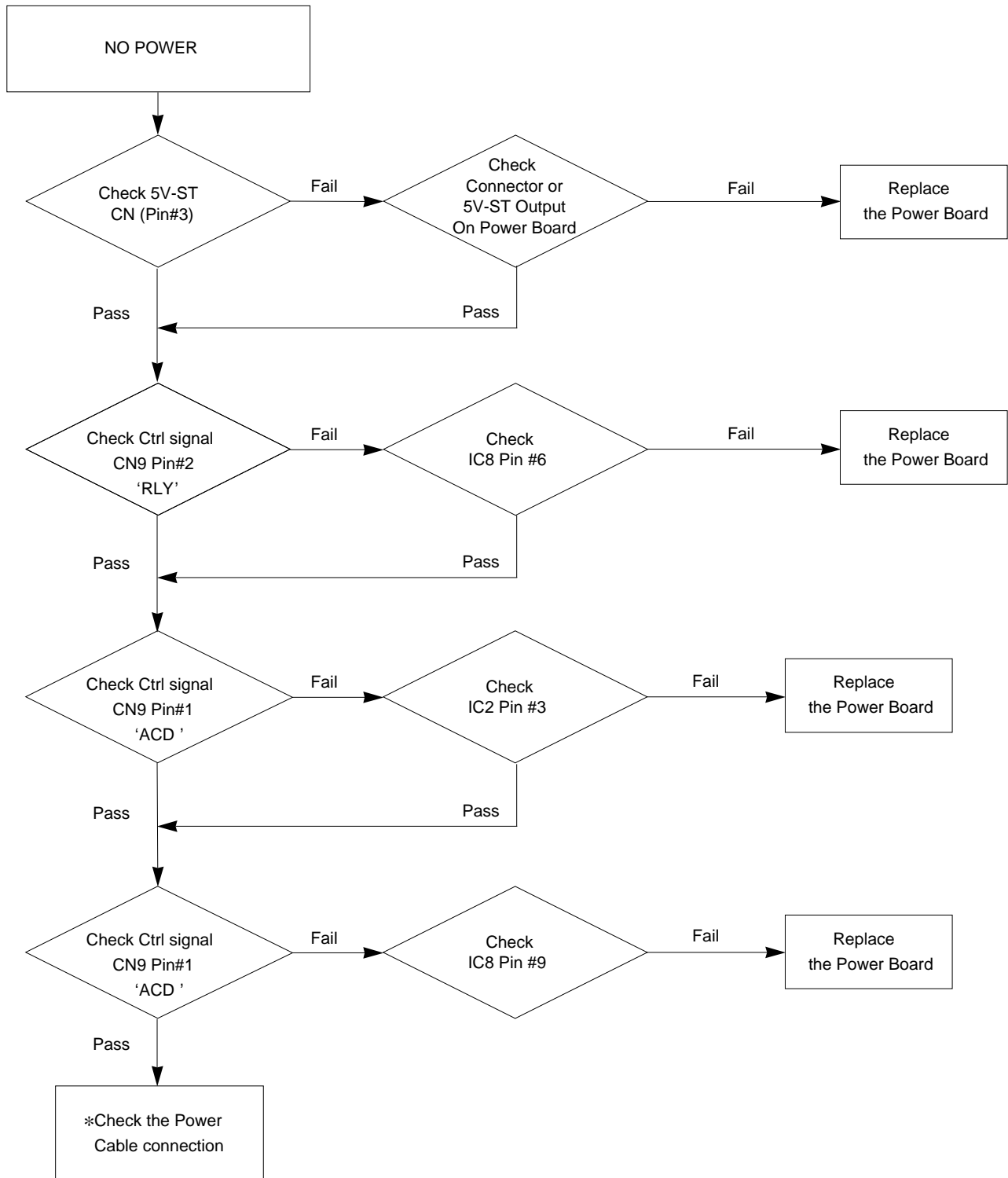
CAUTION

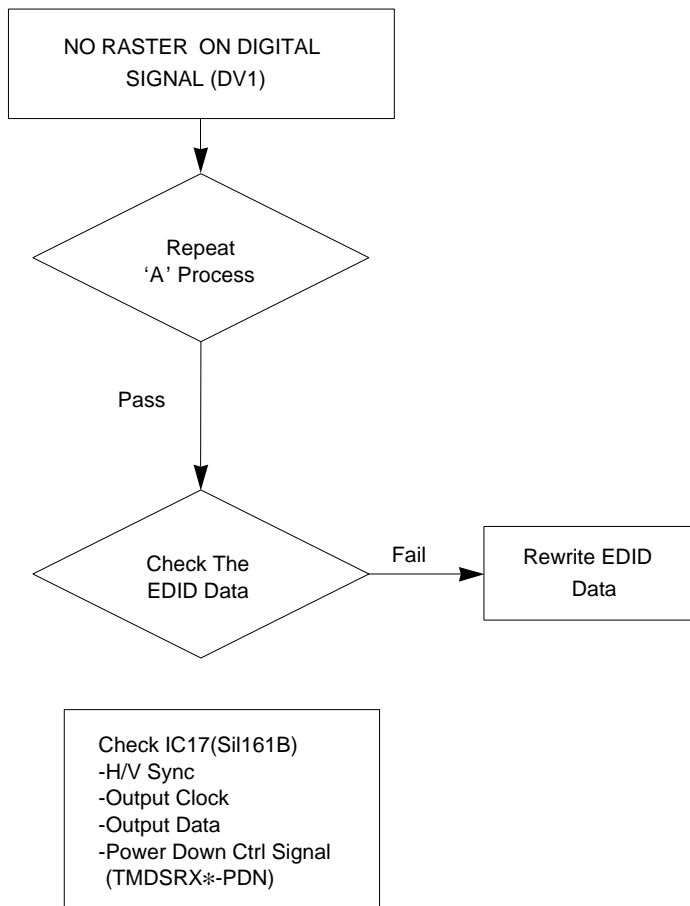
- (1) The power of the signal generator should be turned on before turning on the power of DC power supply.
- (2) The voltage of DC power supply, in standard of Module input voltage, should be preset as below.
Vcc : 5 V, Va : 65 V, Vs : 190 V
- (3) The power of power supply must turned on by this sequence. Reverse direction when turning off.
* Module on : 5 V → Va → Vs, Module off : Vs → Va → 5 V
- (4) Signal generator should be selected with 852 × 480 mode (WVGA)

Section 3

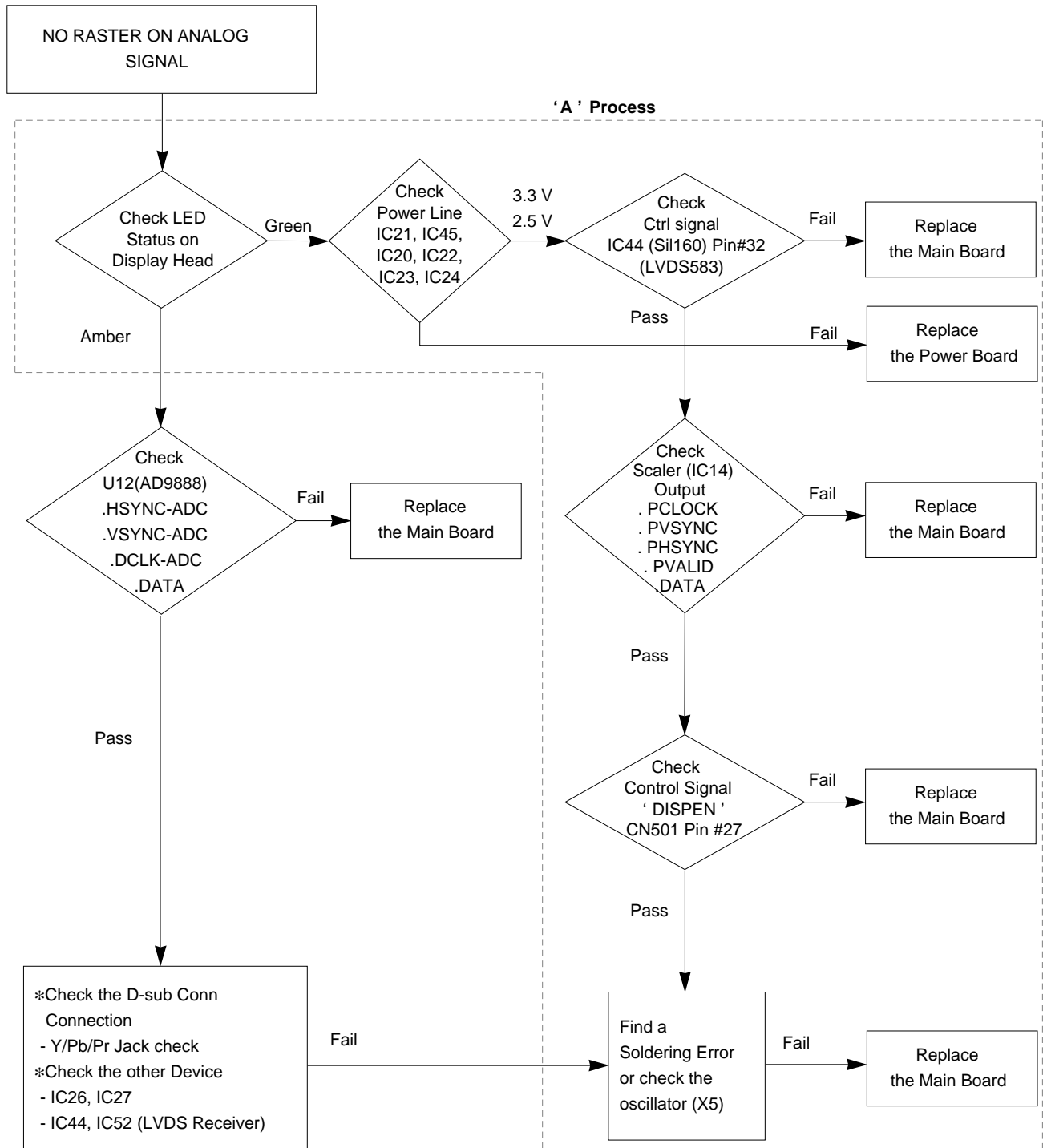
Troubleshooting Guide

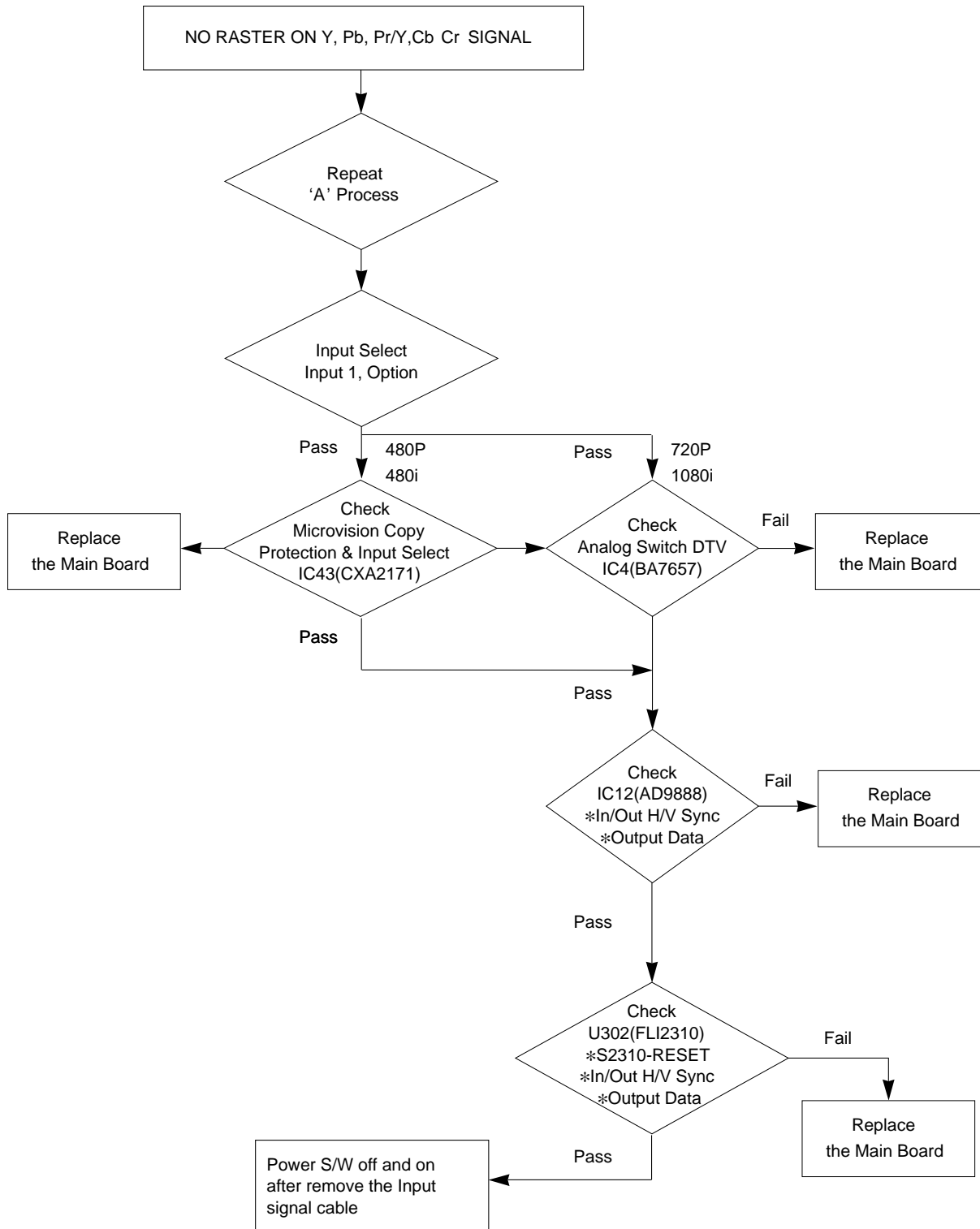
3-1. Out of Order on Power

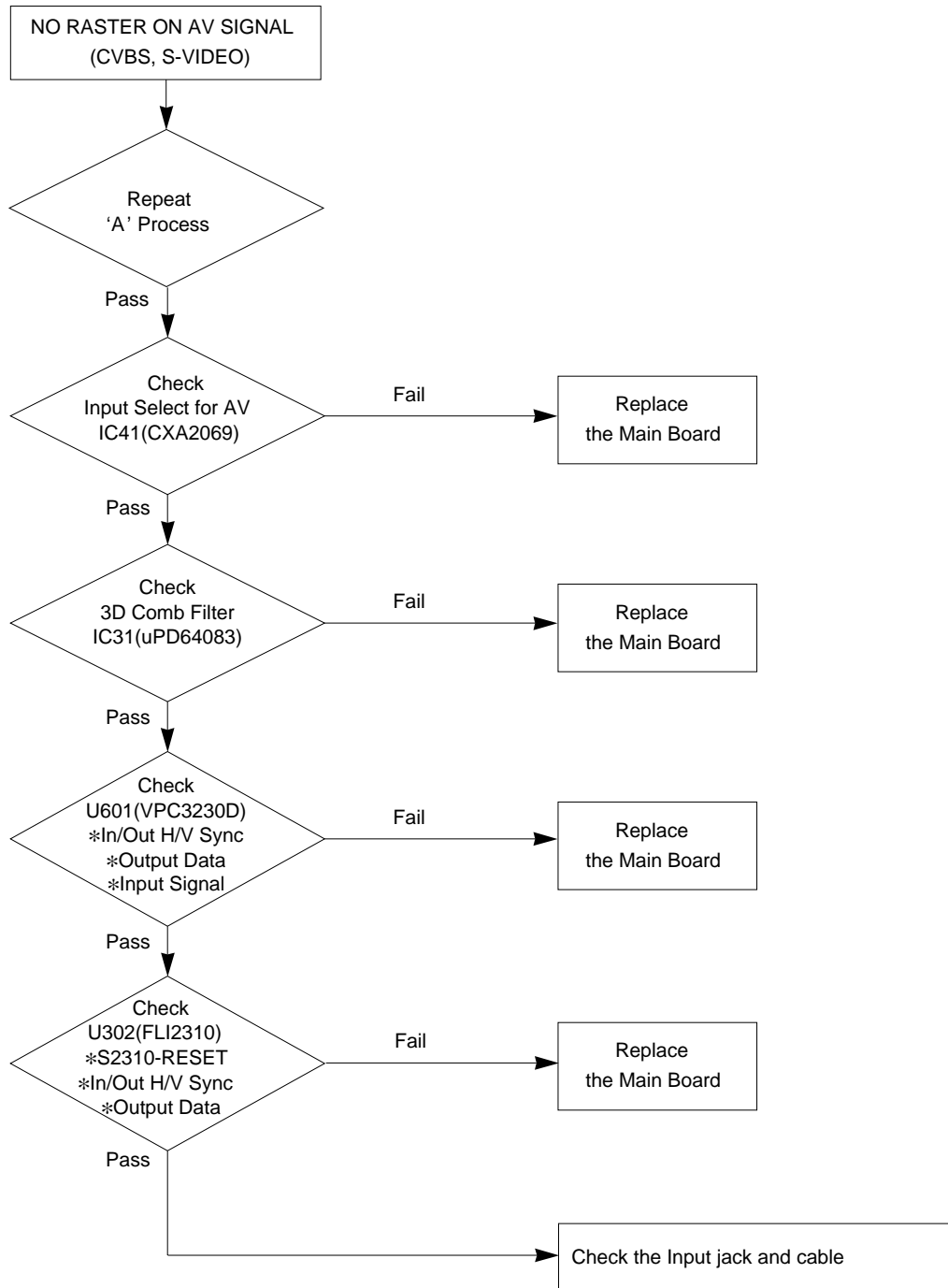




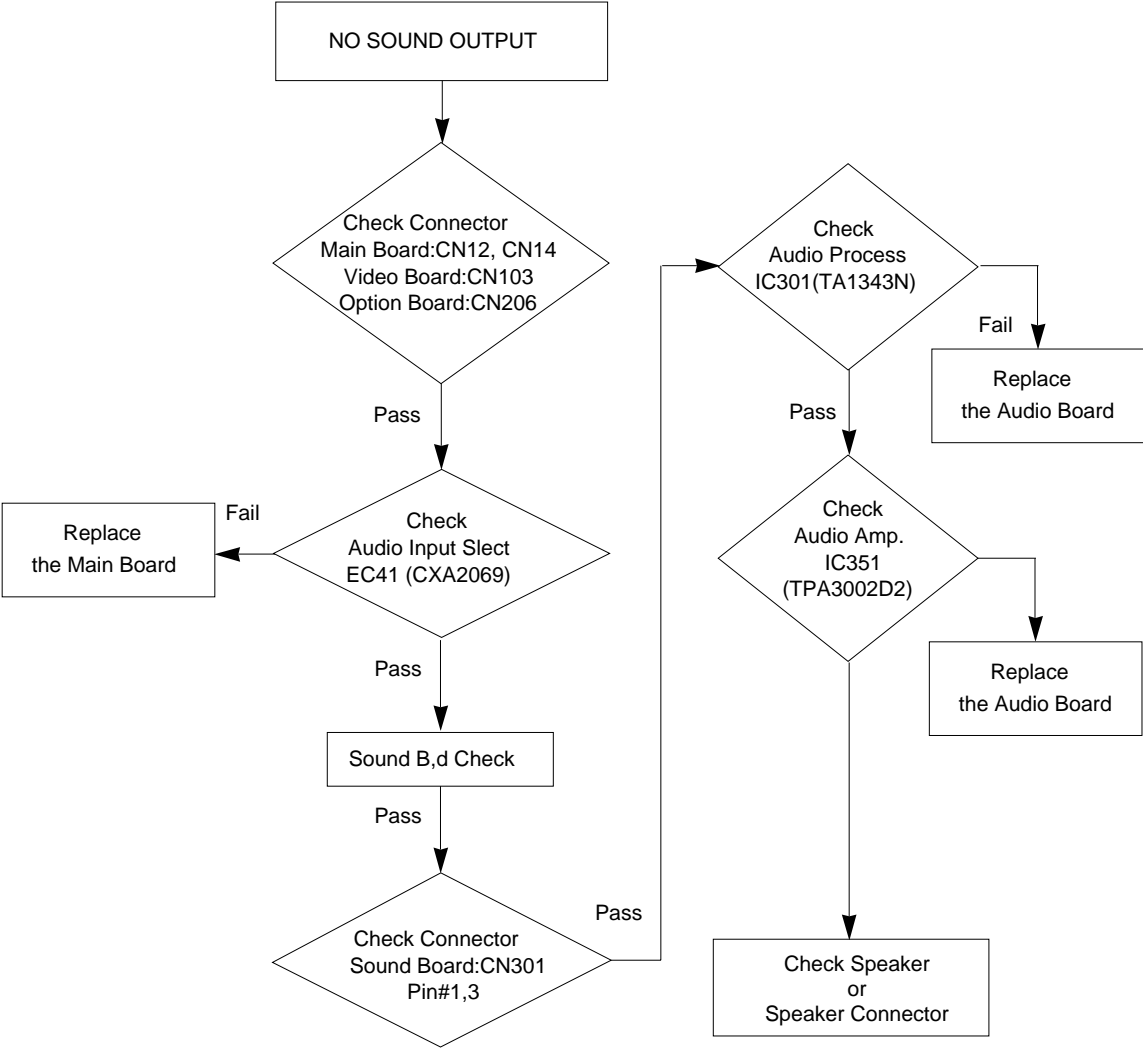
3-2. No Raster State



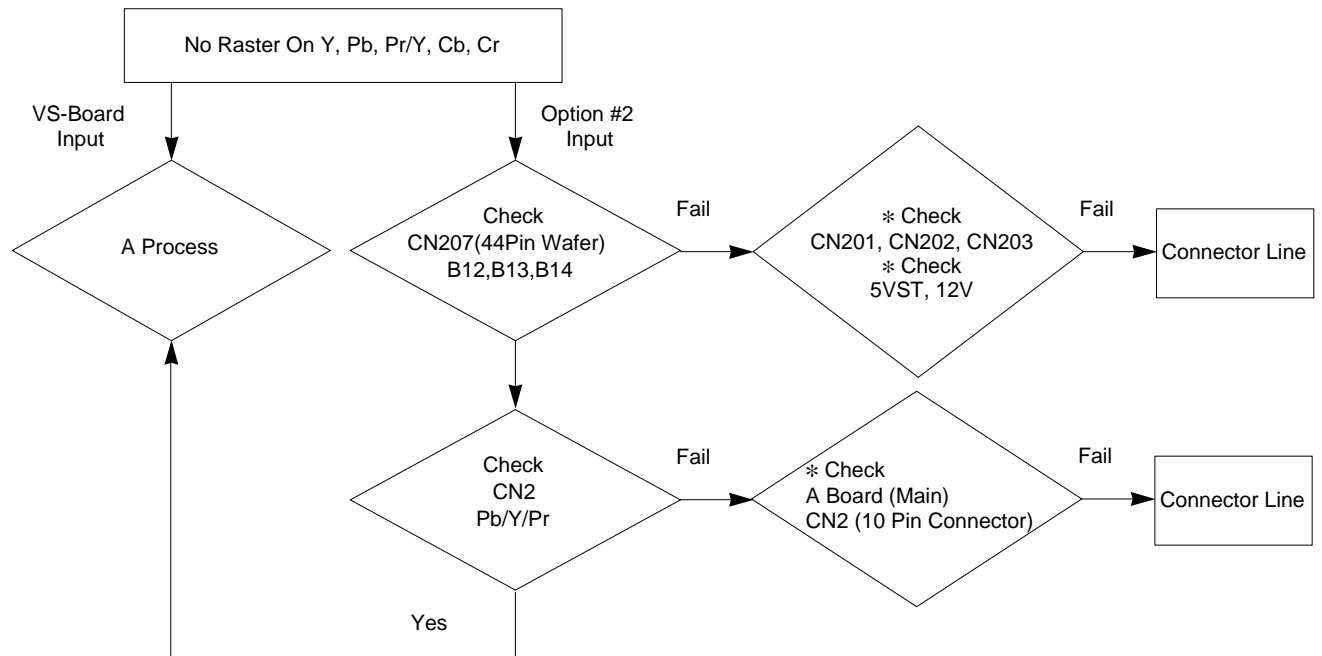
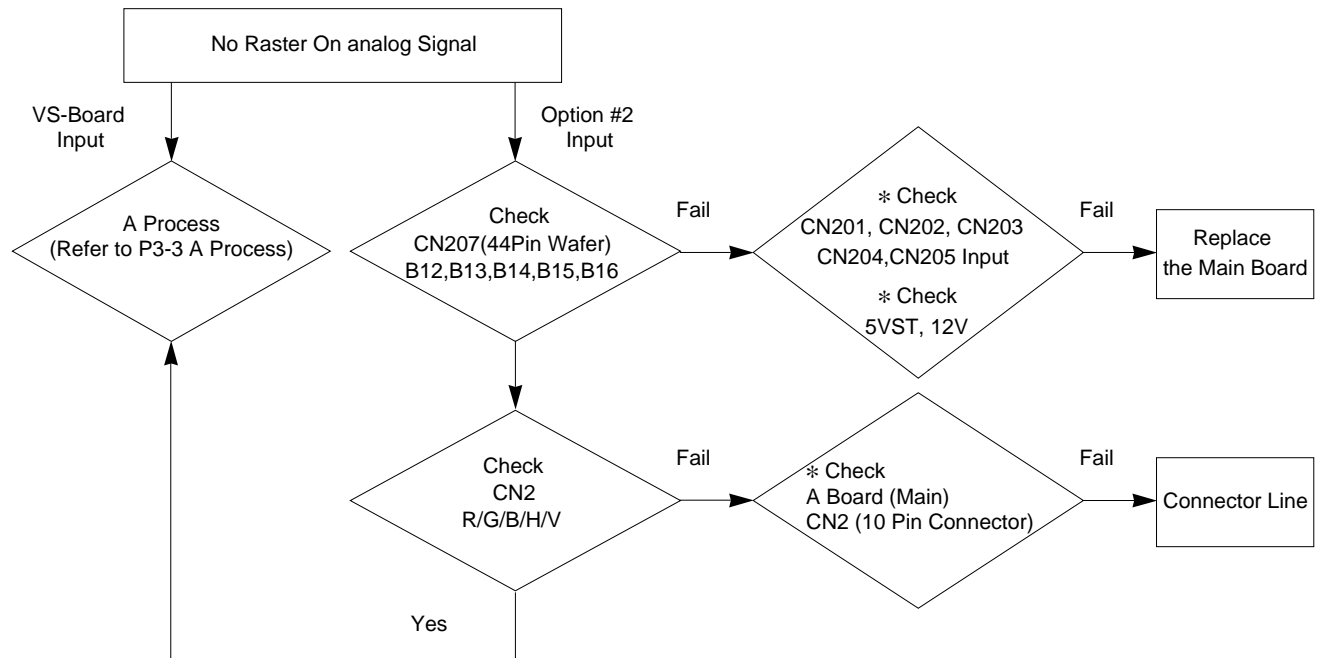




3-3. Sound Troubleshooting



3-4. No Raster on Analog Signal

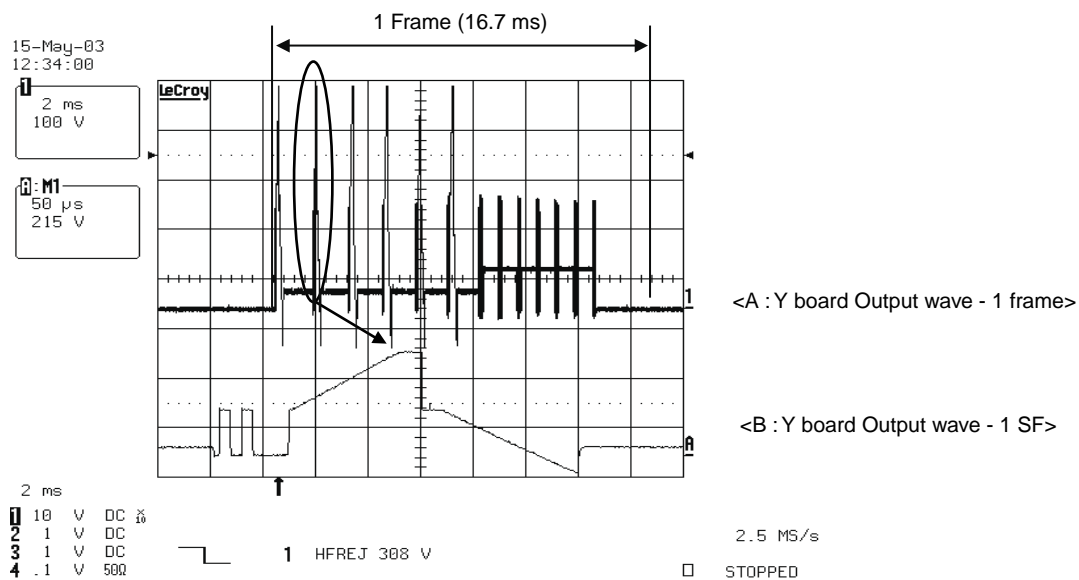


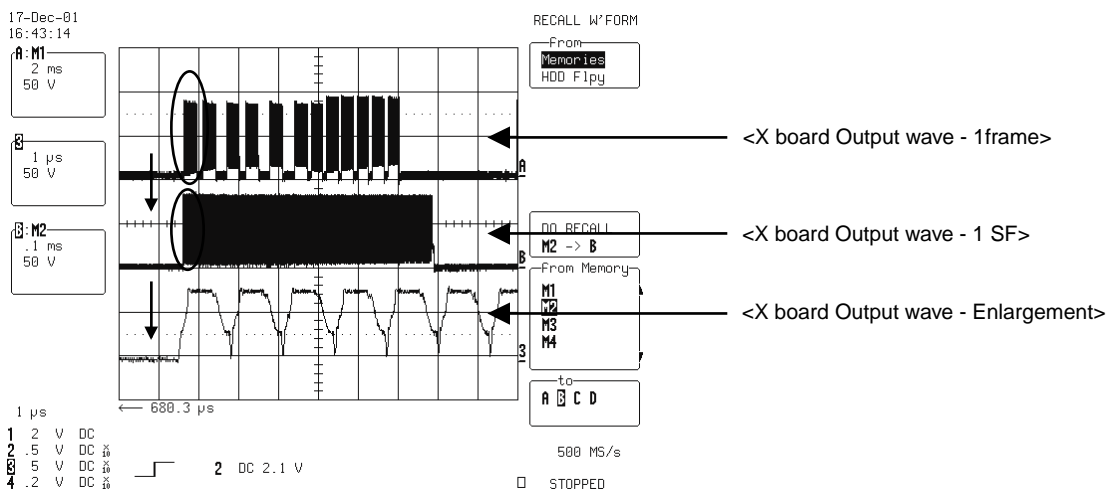
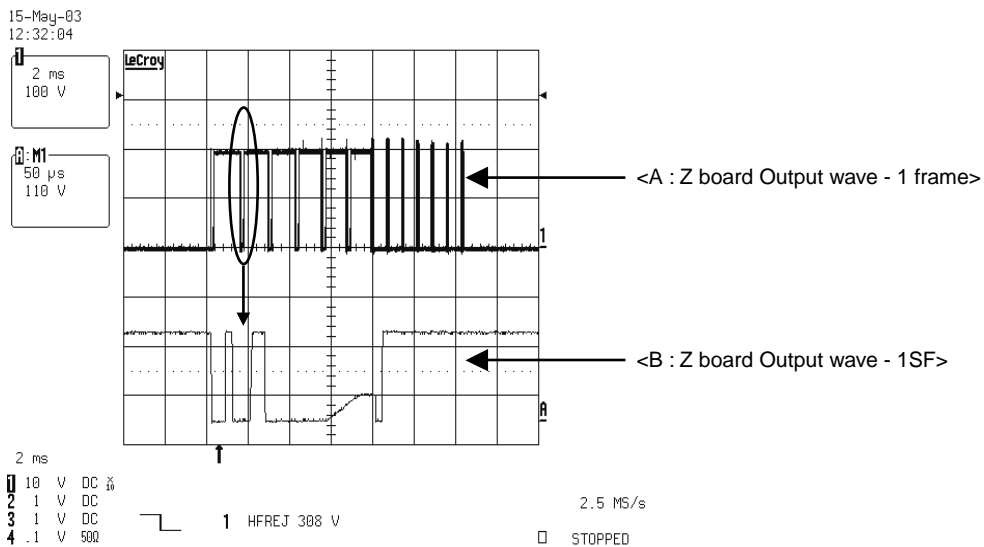
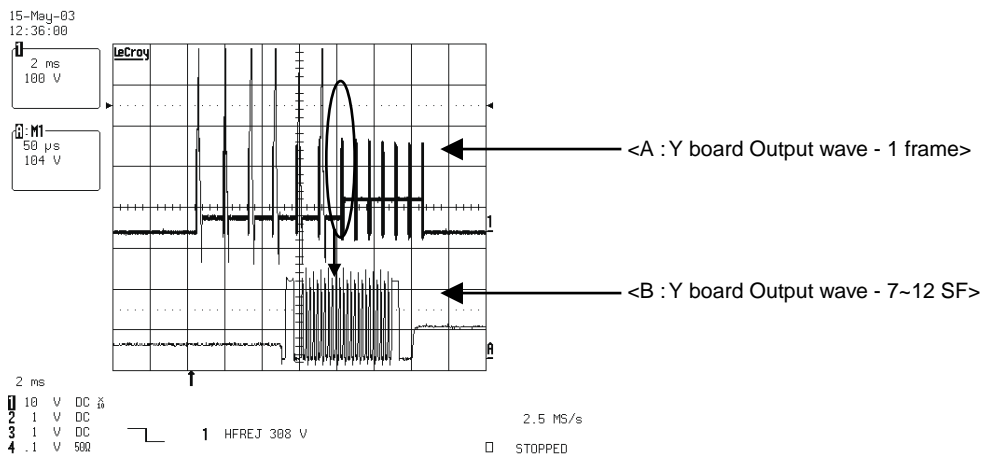
3-5. Trouble Shooting for Panel

3-5-1. Checking for No Picture

A screen does not display at all and condition of black pattern or power off.

- (1) Check whether the CTRL board LED (D1~D4) is turned on or not.
- (2) Check the power and signal cable of CTRL board.
- (3) X board, Y board, Z board is well plugged in.
- (4) Check the connection of X board, Y board and Z board to CTRL board.
- (5) Measure the output wave of X, Y, Z board with oscilloscope (more than 200 MHz) and find the trouble of board by comparing the output wave with below figure.
 - Measure Point of Y board : TP (Connector P4 80 pin)
 - Measure Point of Z board : Connection part of panel (SUS_OUT)
 - Measure Point of X board : L1(RIGHT), L2 (LEFT BOTTOM)
- (6) Check the SCAN (Y side) IC
- (7) Check the DATA (X side) COF IC
- (8) Replace the CTRL board.





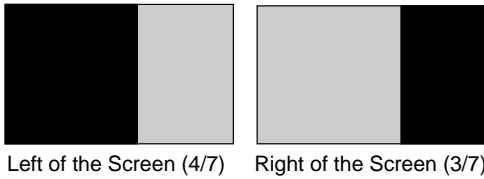
3-5-2. Hitch Diagnosis Following Display Condition

1. 4/7 or 3/7 of the screen doesn't be shown

- (1) Confirm the power connector of X board is well plugged in which is correspond to not showing screen.
- (2) Confirm the connector that is connected between CTRL board and X board correspond to not showing part.
- (3) Replace relevant X board.

* Relationship between screen and X board

Screen X board
 Left of the Screen 4/7 ↔ Right X board
 Right of the Screen 3/7 ↔ Left X board



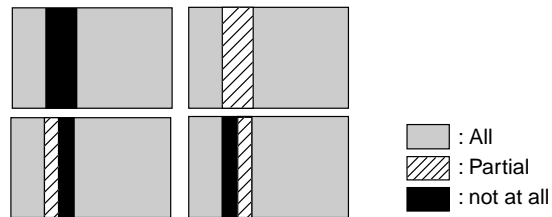
* Screen Display Form

2. The screen doesn't be shown as Data COF (Include not be shown part of Data COF quantity or a part)

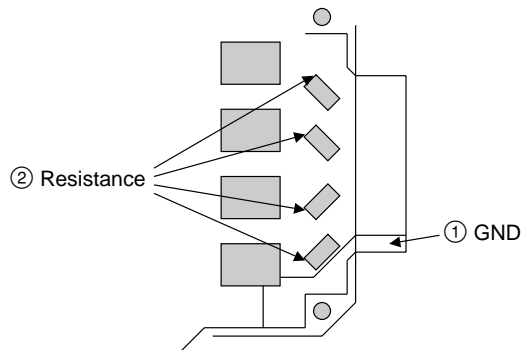
- (1) The problem between Data COF and X board is more possible that the screen is not be shown as data COF.
- (2) Confirm the connector of Data COF is well connected to X board. Correspond to the part that screen is not showing
- (3) Confirm whether the Data COF is failed and replace X board

* Example of the screen display form

(Anything of the 7 Data COF can be shown beside below pictures)



* How to examine Data COF IC

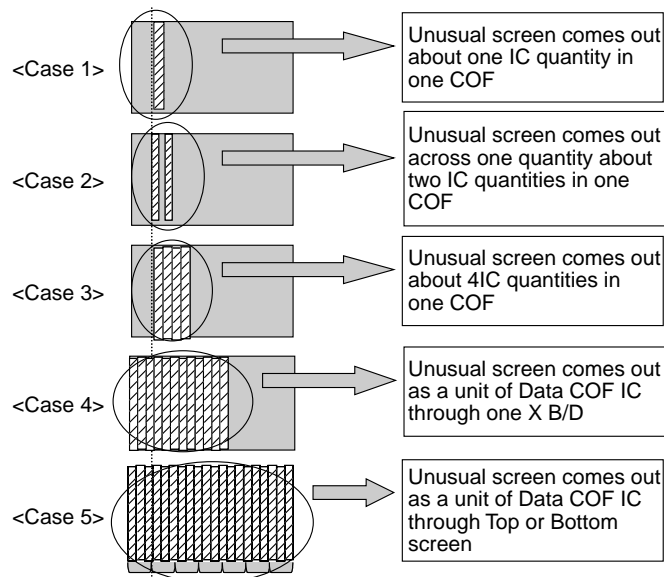


- ① ANODE Pattern (GND)
- ② CATHODE Pattern and examine the Diode to the pure or reverse direction.
- Measure the third resistance value

3. It Generates Unusual Pattern of Data COF IC unit

- (1) In case of generating unusual pattern of Data COF IC unit as below picture, there is problem in the input that is input into Data COF IC
- (2) In case of <case 1, 2, 3>
 - Confirm the connection of Data COF connector
 - Replace the relevant X board
- (3) In case of <case 4, 5>
 - Confirm the connector that is connected from CTRL to X board
 - Replace relevant Xboard or CTRL board

* Screen Display Form



4. Regular Stripe is Generated about the Quantity of one Data COF IC or more

- (1) In case of generating regular stripe about the quantity of one Data COF IC, there is problem at the output of output-flatworm of X board

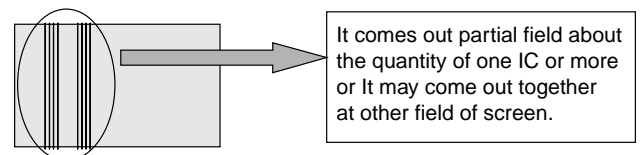
In case of generating regular stripe about the quantity of two Data COF IC, that means the data which is conveyed from CTRL board doesn't conveyed well.
- (2) Confirm the Xboard connection connector plugged in well.

Correspond to unusual screen.
- (3) Replace relevant Xboard or CTRL board.

* Relationship between screen and X board

Screen		X board
Left Bottom of the Screen 4/7	↔	Right X board
Right Bottom of the Screen 3/7	↔	Left X board

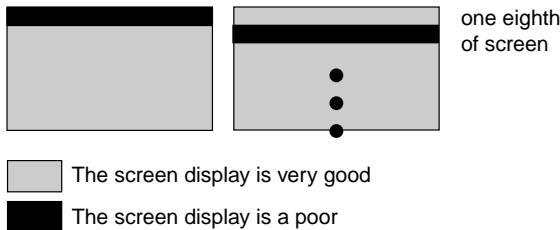
* Screen Display Form



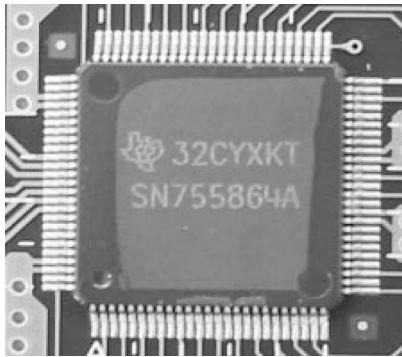
5. The screen display has a problem for Scan FFC.

- (1) It's may be a problem between Scan FFC and Y board.
- (2) Check the connection of Y board and Scan COF.
- (3) If the Scan IC is failed, replace the Y DRV board.

* Screen Display Form



* Check a method of SCAN IC

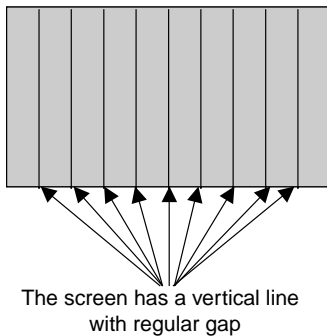


Change the Vpp Pin into ANODE and GND Pin into CATHODE and then test the Diode with forward or reverse direction.

6. The screen has a vertical line with regular gap. (A vertical stripe flash at especial color)

- (1) This is a problem about control board.
- (2) Replace Control board.

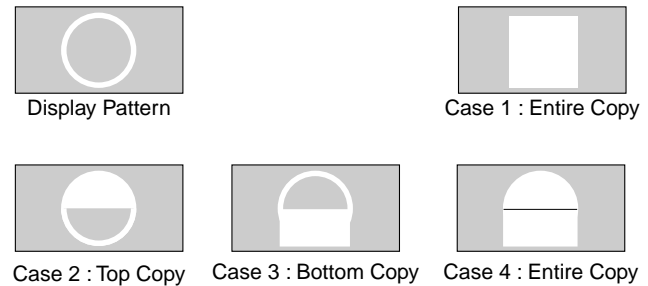
* Screen Display Form



7. A data copy is happened into vertical direction

- (1) In this case, it's due to incorrect marking of scan wave.
- (2) Replace a Y DRV board or Y SUS board.

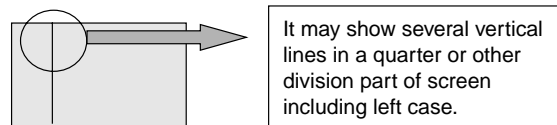
* Screen Display Form



8. The screen has one or several vertical line

- (1) In this case, It isn't a problem about controller board or X board.
- (2) It may cause followings.
 - It's out of order a panel
 - Open or short of DATA COF FPC attached panel
 - It's out of order a DATA COF attached panel
- (3) Replace Module.

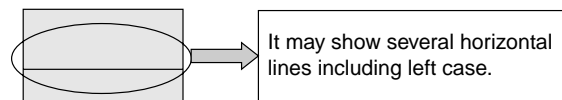
* Screen Display Form



9. The screen has one or several horizontal line

- (1) In this case, it isn't a problem about controller board or X board.
- (2) It may cause followings.
 - It's out of order a panel
 - Open or short of SCAN FPC attached panel
 - It's out of order a SCAN IC attached panel
- (3) Replace Y DRV board

* Screen Display Form



10. The screen displays input signal pattern but the brightness is dark

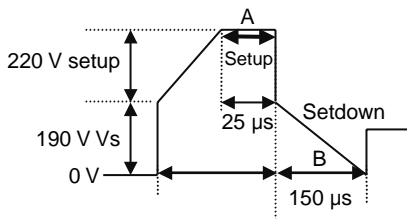
- (1) In this case, Z board operation isn't complete.
- (2) Check the power cord of Z board.
- (3) Check the connector of Z board and Controller board.
- (4) Replace the Controller board or Z board.

11. The screen displays other color partially on full white screen or happens discharge partially on full black screen.

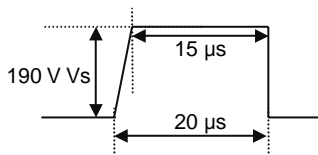
- (1) Check the declination of Y board set up, set down wave.
- (2) Check the declination of Z board ramp wave.
- (3) Measure each output wave with oscilloscope (more than 200 MHz) and compare the data with below figure data.

Adjust the Y board set up (Test-up : B/C[∇ s/ ∇ s])/setdown (Test-down : D[∇ s]) and Z board ramp (Tramp : F/G[∇ s/ ∇ s]) declination by changing VR1/VR2/VR3.

- Measuring Point of Y board : P4 (Connector P4 36 pin)
- Measuring Point of Z board : B37 (SUS_OUT)



Y Output Voltage Waveform



Z RAMP Voltage Waveforms

12. A center of screen is darker than a edge of screen at full white pattern.

- (1) In this case, it's a problem about Z board ramp wave.
- (2) Check the connection cable of Z board and CTRL board.
- (3) Replace the Z board.



* Screen Display Form

13. It doesn't display a specified brightness at specified color

- (1) Check the connector of CTRL board input signal.
- (2) Replace the CTRL board.

Section 4

Spare Parts

4-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked \triangle are critical to safe operation.
Therefore, specified parts should be used in the case of replacement.

WARNHINWEIS

Les composants identifiés par la marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts List has the present standardized repair parts.

3. Stock of Parts

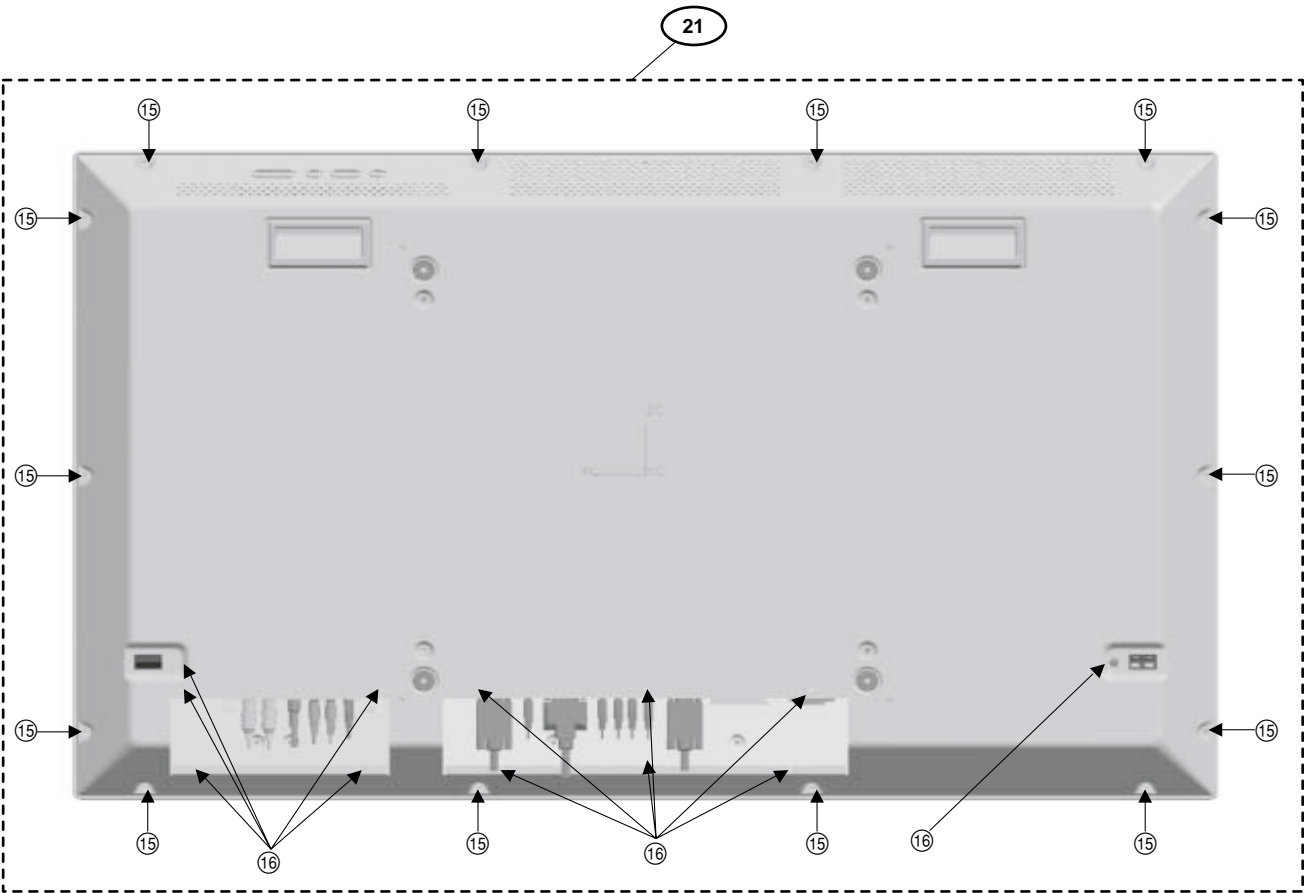
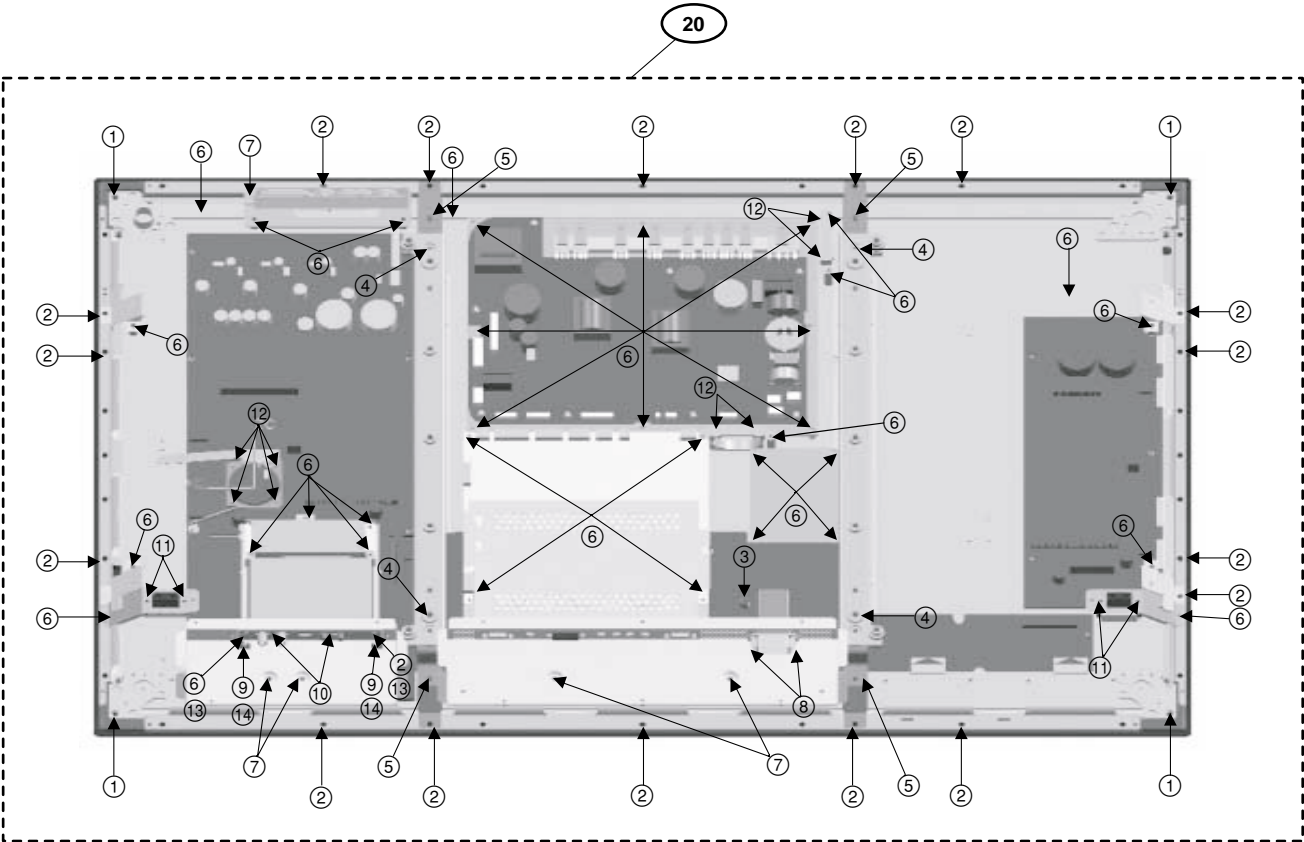
Parts marked with “o” at SP (Supply Code) column of the Spare Parts list may not be stocked. Therefore, the delivery date will be delayed.
Items with no part number and no description are not stocked because they are seldom required for routine service.

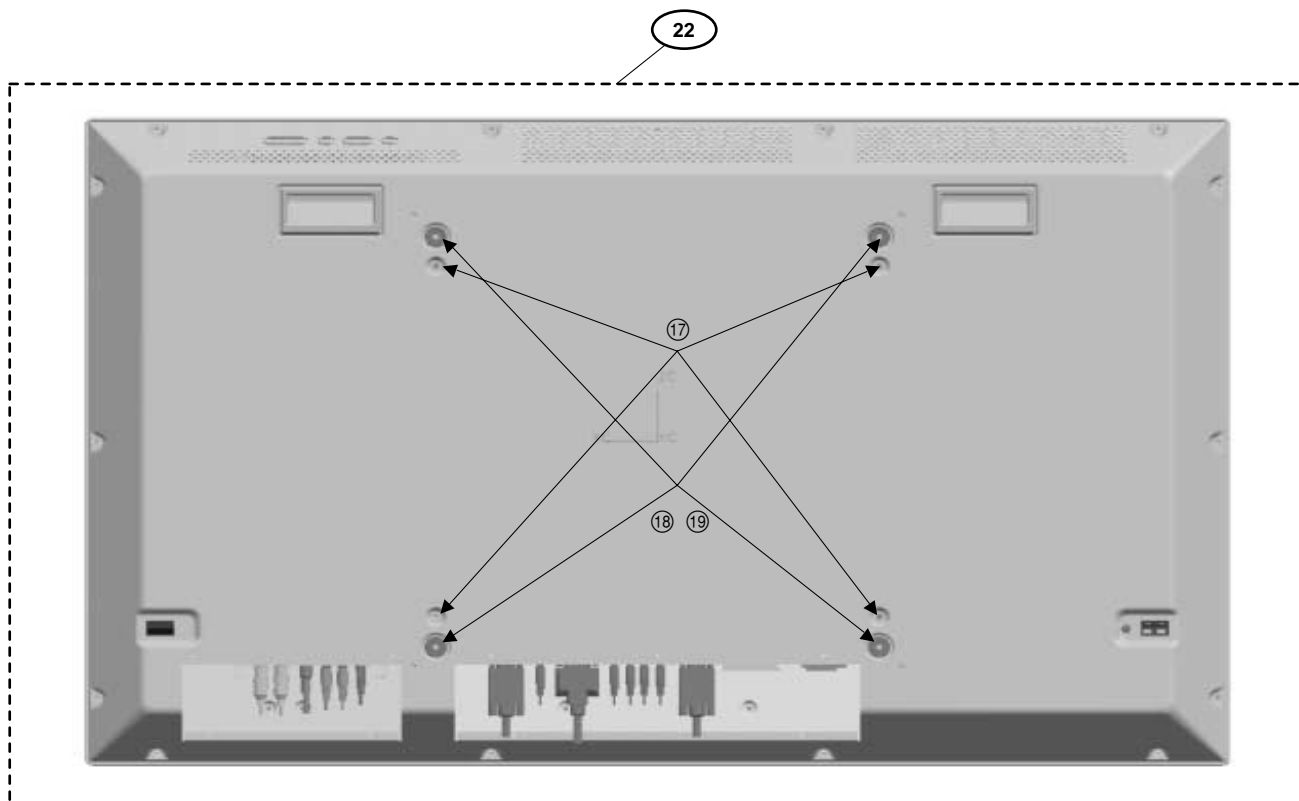
4. Units for Capacitors, Inductors and Resistors

The following units are assumed in Schematic Diagrams, Electrical Parts List and Exploded Views unless otherwise specified.

Capacitors	: μF
Inductors	: μH
Resistors	: Ω

4-2. Exploded Views



**Note**

The screws can be ordered in units of screw kit. (Sony part No. 20 to 22)

No.	Part No.	SP Description	No.	Part No.	SP Description	No.	Part No.	SP Description
20	X-4042-795-1	s SCREW KIT, INSIDE	21	X-4042-797-1	s SCREW KIT, OUTSIDE	22	X-4042-796-1	s SCREW KIT, WALL MOUNT

INSIDE SCREW KIT

- ① 1SZZTMP007C
- ② 332-102C
- ③ 339-006B
- ④ 339-009C
- ⑤ 1SZZTMP007A
- ⑥ 339-008H
- ⑦ 339-008K
- ⑧ 339-008L
- ⑨ 1SZZTMF012A
- ⑩ 332-113E
- ⑪ 332-113D
- ⑫ 339-008F
- ⑬ 1NHB0302118
- ⑭ 1WZZTKK005A

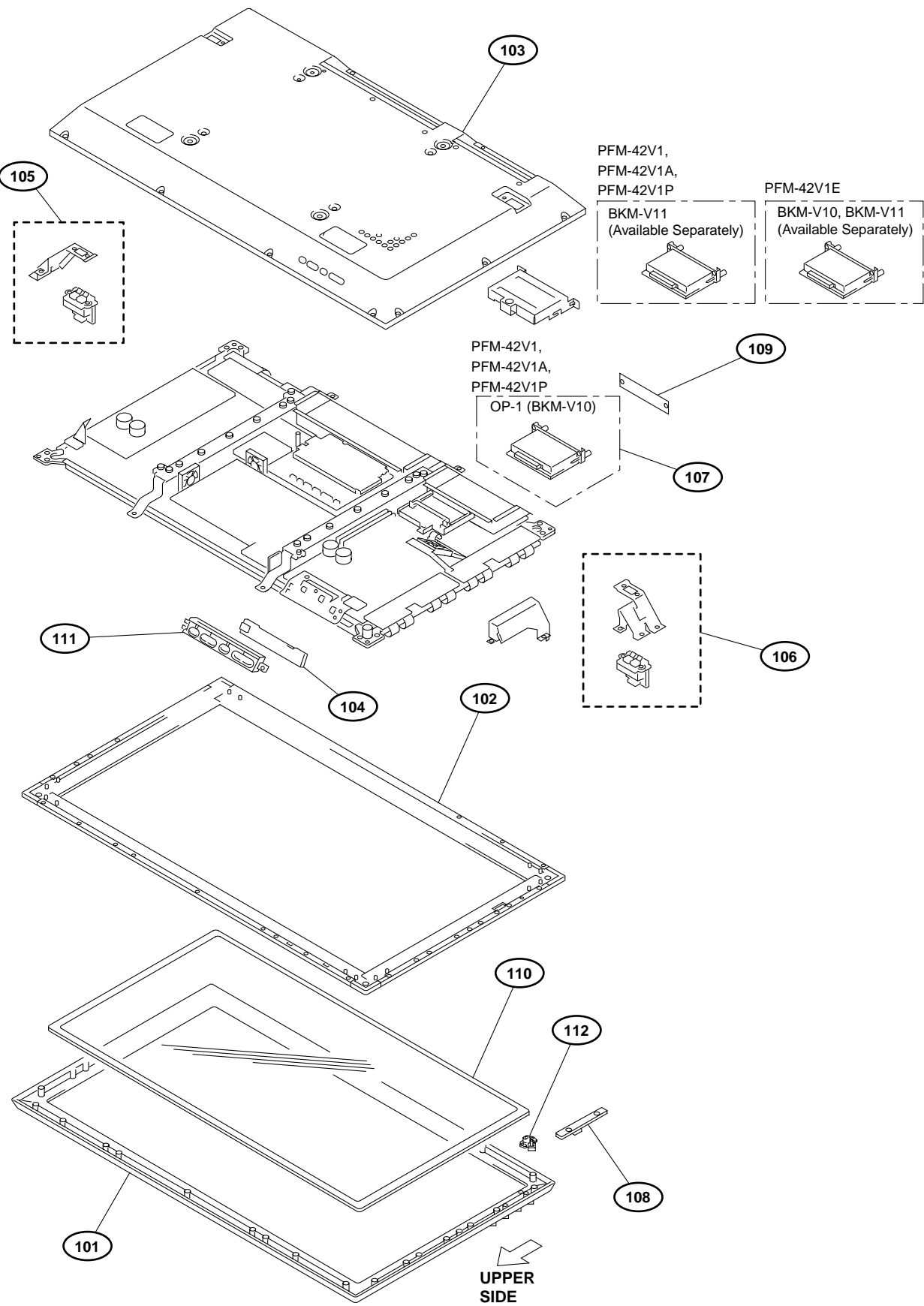
OUTSIDE SCREW KIT

- ⑮ 332-102R
- ⑯ 339-008K

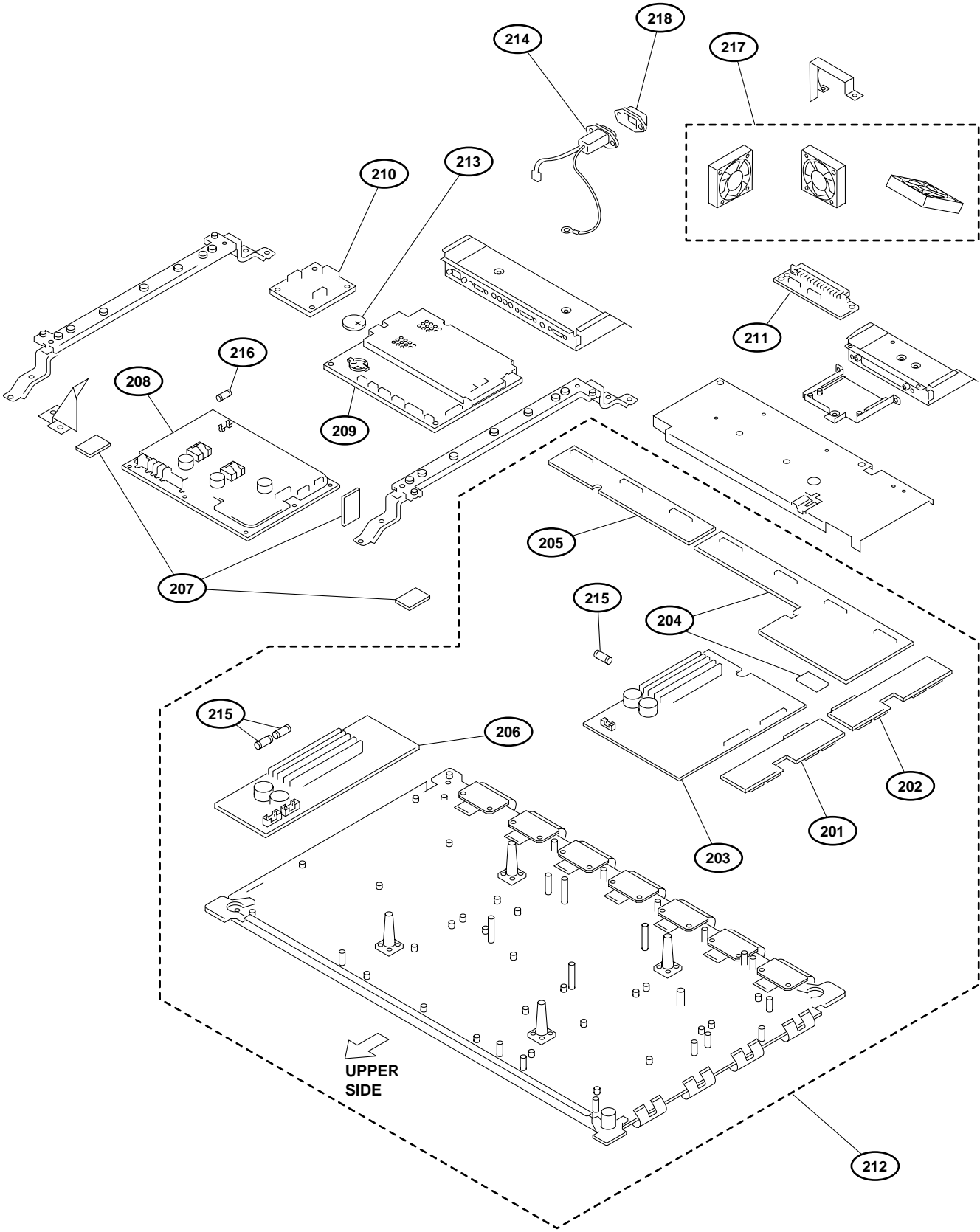
WALL MOUNT SCREW KIT

- ⑰ 1SZZVMB005A
- ⑱ 1WZZTKK004A
- ⑲ 1SZZTMH003A

- The numbers encircled by round corresponds to numbers in illustrations.

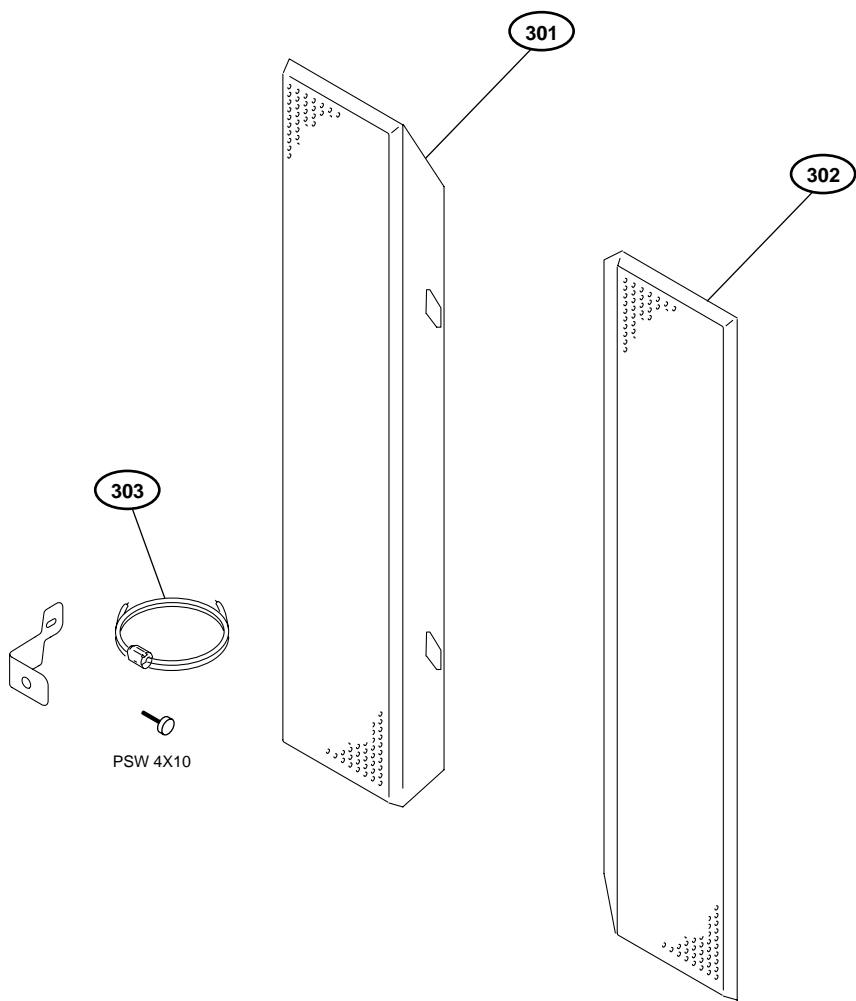


No.	Part No.	SP Description
101	△ X-4042-097-1	s BEZEL ASSY (SILVER) (PFM-42V1, PFM-42V1A, PFM-42V1E)
101	△ X-4042-306-1	s BEZEL ASSY (BLACK) (PFM-42V1)
101	△ X-4042-298-1	s BEZEL ASSY (PFM-42V1P)
102	X-4042-802-1	s FRAME FRONT ASSY
103	△ X-4042-801-1	s REAR COVER ASSY (SILVER) (PFM-42V1, PFM-42V1A, PFM-42V1E)
103	△ X-4042-803-1	s REAR COVER ASSY (BLACK) (PFM-42V1, PFM-42V1P)
104	1-761-814-11	o MOUNTED CIRCUIT BOARD, H-2
105	1-761-817-11	o MOUNTED CIRCUIT BOARD, T(L)
106	1-761-817-21	o MOUNTED CIRCUIT BOARD, T(R)
107	1-761-816-11	o MOUNTED CIRCUIT BOARD, OP-1 (PFM-42V1, PFM-42V1A, PFM-42V1P)
108	1-761-813-11	o MOUNTED CIRCUIT BOARD, H-1
109	4-080-962-02	o BLANK, PANEL (PFM-42V1E)
110	4-097-589-01	s GLASS, FILTER
111	4-101-217-01	s MULIT BUTTON (SILVER) (PFM-42V1, PFM-42V1A, PFM-42V1E)
111	4-101-217-11	s MULIT BUTTON (BLACK) (PFM-42V1, PFM-42V1P)
112	4-101-215-01	s BUTTON, POWER



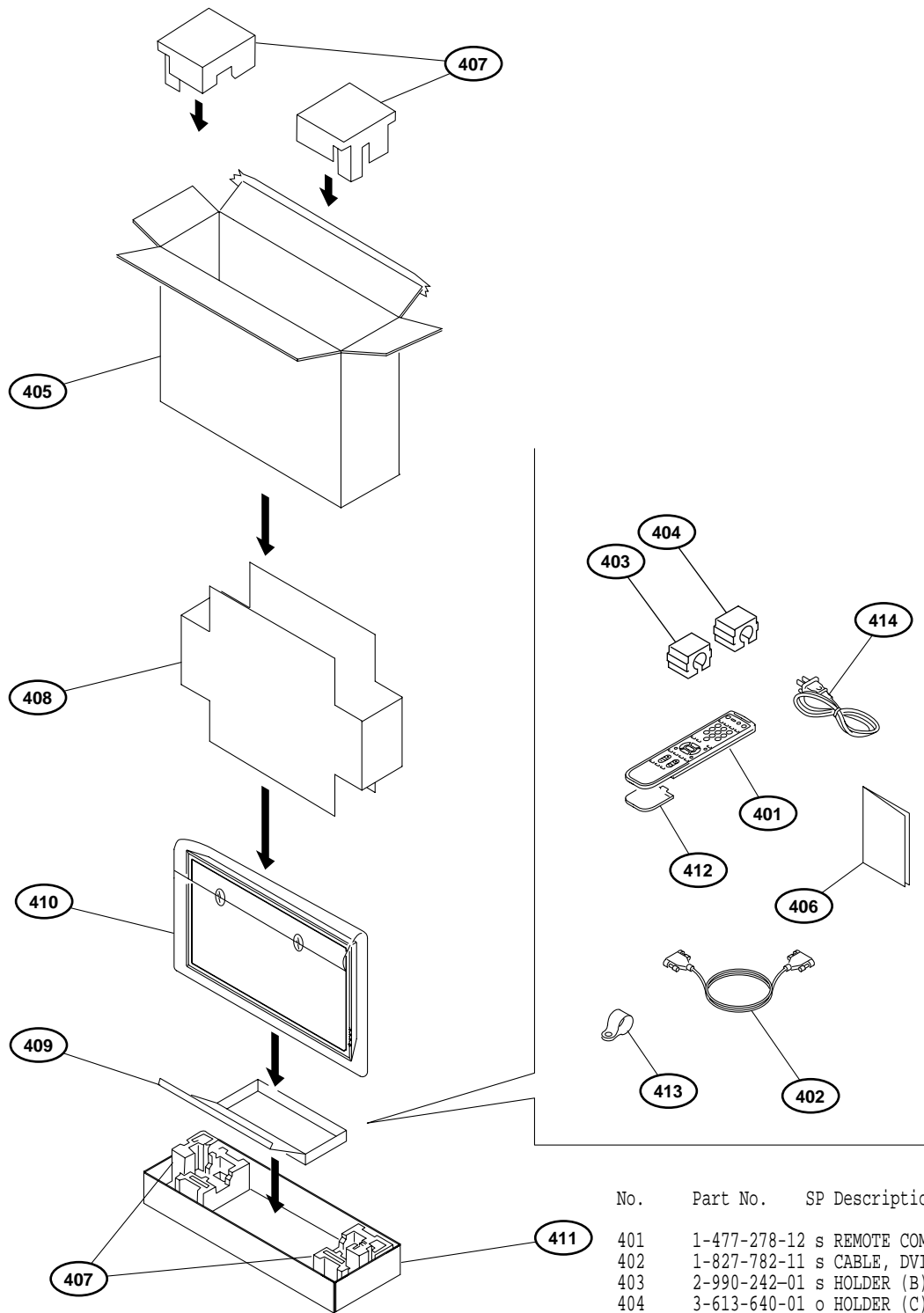
No.	Part No.	SP Description
201	1-761-873-11	o MOUNTED CIRCUIT BOARD, YDT
202	1-761-874-11	o MOUNTED CIRCUIT BOARD, YDB
203	1-761-871-11	o MOUNTED CIRCUIT BOARD, Y-SUS
204	1-761-875-11	o MOUNTED CIRCUIT BOARD, CTRL
205	1-761-876-11	o MOUNTED CIRCUIT BOARD, XR
206	1-761-872-11	o MOUNTED CIRCUIT BOARD, Z-SUS
207	1-761-870-11	o MOUNTED CIRCUIT BOARD, TEMP
208	1-761-810-11	o MOUNTED CIRCUIT BOARD, G
209	1-761-811-11	o MOUNTED CIRCUIT BOARD, A
210	1-761-812-11	o MOUNTED CIRCUIT BOARD, L
211	1-761-815-11	o MOUNTED CIRCUIT BOARD, I
212	△ 1-805-424-11	s PLASMA DISPLAY PANEL (PFM-42V1, PFM-42V1E, PFM-42V1P)
212	△ 1-805-536-11	s PLASMA DISPLAY PANEL (PFM-42V1A ONLY)
213	△ 1-528-174-11	s BATTERY, LITHIUM (CR2032 TYPE)
214	△ 1-417-398-11	s AC INLET
215	△ 1-576-300-12	s FUSE (H.B.C.)(8A/250V)
216	△ 1-576-232-12	s FUSE (H.B.C.)(5A/250V)
217	△ 1-787-127-11	s DC FAN
218	2-990-241-02	s HOLDER (A), PLUG

SS-SP20B/SP20S (Speaker)



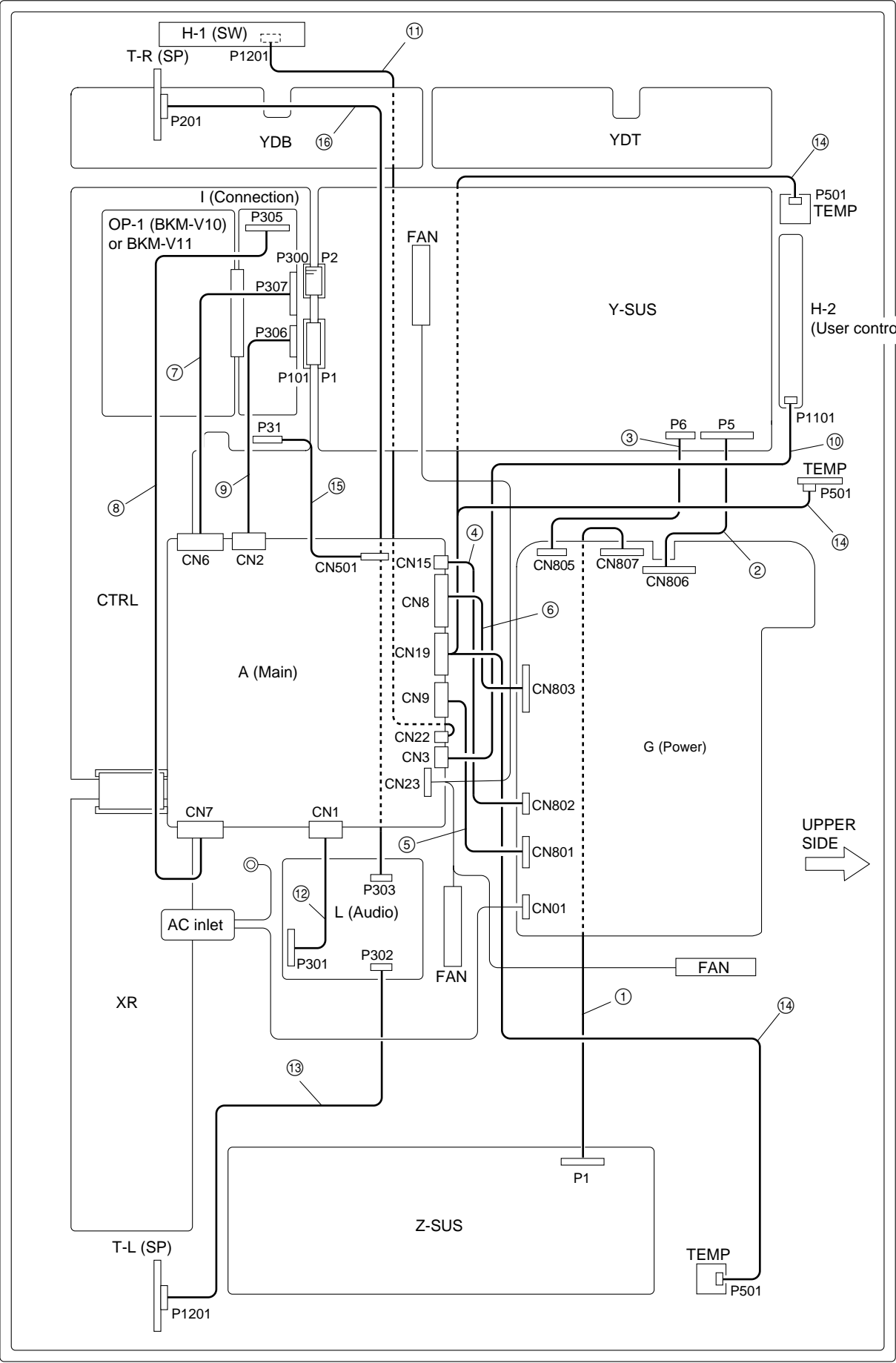
No.	Part No.	SP Description
301	1-825-627-11	s LOUDSPEAKER L (BLACK)
301	1-825-628-11	s LOUDSPEAKER L (SILVER)
302	1-825-627-21	s LOUDSPEAKER R (BLACK)
302	1-825-628-21	s LOUDSPEAKER R (SILVER)
303	1-900-276-27	s CONNECTOR ASSY (SP)

Screws/Washers
7-682-962-09 s SCREW PSW 4X10



No.	Part No.	SP Description
401	1-477-278-12	s REMOTE COMMANDER (RM-971)
402	1-827-782-11	s CABLE, DVI
403	2-990-242-01	s HOLDER (B), PLUG
404	3-613-640-01	o HOLDER (C), PLUG
405	4-097-447-01	o INDIVIDUAL CARTON
406	4-097-590-01	s MANUAL, INSTRUCTION (JAPANESE, ENGLISH, FRENCH, GERMAN, SPANISH, ITALIAN, SIMPLIFIED CHINESE)
407	4-101-220-01	o CUSHION, TOP& BOTTOM
408	4-101-222-01	o CARTON, INSIDE
409	4-101-224-01	o ACCESSORY BOX
410	4-101-223-01	o BAG, PROTECTION
411	4-101-219-01	o TRAY, BOTTOM
412	4-978-977-01	s LID, BATTERY (BLACK)
413	4-101-214-01	s HOLDER, CABLE
414	△ -----	s CORD SET, POWER (See 1-4. Warning on Power Connection)

Board Connections



No.	Part No.	SP Description
①	△ 1-900-276-34	o CONNECTOR ASSY, Z SUS 8P
②	△ 1-900-280-74	o CONNECTOR ASSY, Y SUS 10P
③	△ 1-900-280-75	o CONNECTOR ASSY, Y SUS 4P
④	△ 1-900-280-76	o CONNECTOR ASSY, MAIN 4P
⑤	△ 1-900-280-77	o CONNECTOR ASSY, MAIN 7P
⑥	△ 1-900-280-78	o CONNECTOR ASSY, MAIN 12P
⑦	△ 1-900-280-79	o CONNECTOR ASSY, SUB 13P
⑧	△ 1-900-280-80	o CONNECTOR ASSY, SUB 15P
⑨	△ 1-900-280-81	o CONNECTOR ASSY, SUB 10P
⑩	△ 1-900-280-82	o CONNECTOR ASSY, KEY 4P
⑪	△ 1-900-280-83	o CONNECTOR ASSY, RMT 7P
⑫	△ 1-900-280-84	o CONNECTOR ASSY, AU 12P
⑬	△ 1-900-280-85	o CONNECTOR ASSY, SPK 3P
⑭	△ 1-900-280-86	o CONNECTOR ASSY, SENS 12P
⑮	△ 1-900-280-87	o CONNECTOR ASSY, 31P
⑯	△ 1-900-280-88	o CONNECTOR ASSY, SPK 400MM 3P

• The numbers encircled by round corresponds to those of the left illustration.

SAFETY CHECK-OUT

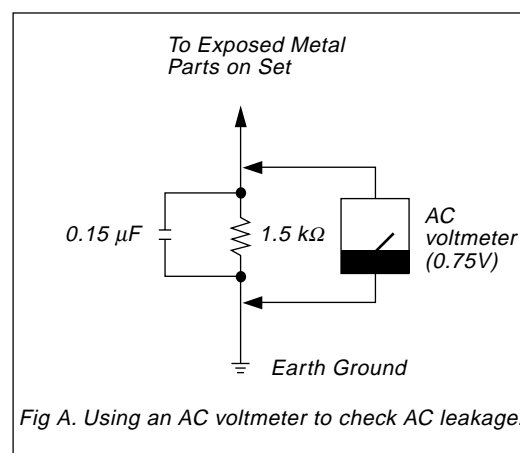
After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



PFM-42V1 (SY)
PFM-42V1A (SY)
PFM-42V1E (SY)
PFM-42V1P (SY) E
9-870-371-02

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